PAPER TRADE JOURNAL

June 11, 1956

Why A Maintenance Consultant

•

Odors in Board and Papers

•

Improved ClO, Generation

•

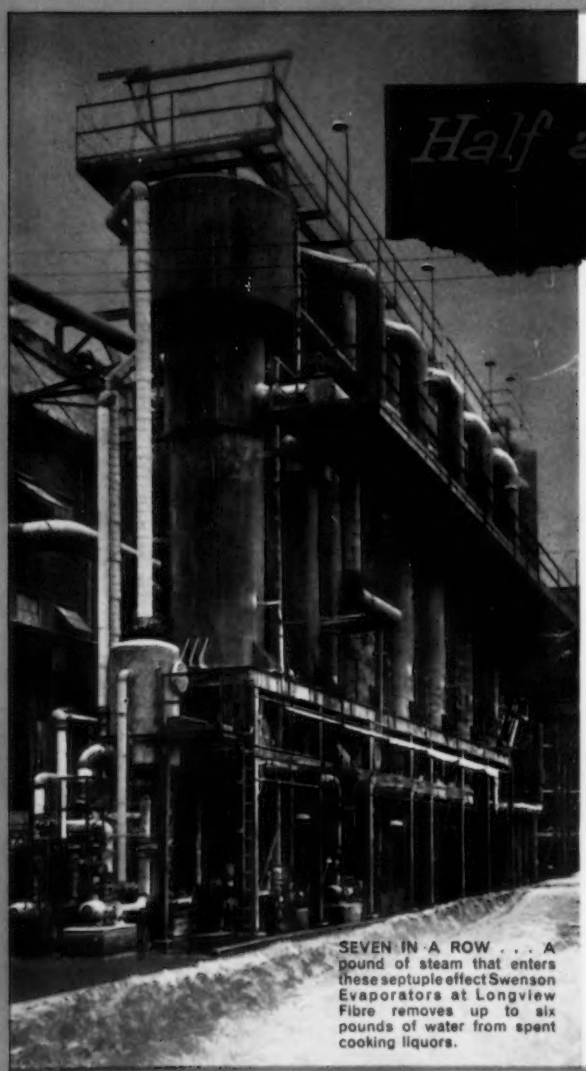
Improved Gwd. Production

•

Rubber Roll Developments

•

New Automatic Roll Wrapper



SEVEN IN A ROW . . . A pound of steam that enters these septuple effect Swenson Evaporators at Longview Fibre removes up to six pounds of water from spent cooking liquors.

Half a Million Pounds

OF EVAPORATOR CAPACITY PER HOUR!

Lower operating costs through increased evaporator steam economy! That is the story at Longview Fibre Company, Longview, Washington, since Swenson Evaporators were installed. The two septuple effect evaporators provide capacity to evaporate one-half million pounds of water per hour!

The Longview economy story is not new to Swenson. Ninety per cent of the septuple effect evaporators in use today were engineered by Swenson. Put Swenson's engineering know-how and experience to work in your plant. Call a Swenson engineer . . . now.

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SWENSON
Proved Engineering for the Process Industries
SINCE 1889

A Division of WHITING Corporation

Evaporators • Pulp Washers • Filters
Digester Blow Condensers
Turpentine Condensers

The risk is too great —clean it right

You don't take risks when men, equipment, and lost production time are involved. That's why more and more companies are investigating the methods and firms used in their chemical cleaning. They know it's work for experts.

What are they concerned about?

First, they want to know they are getting the benefits of experience. These benefits include less downtime and more thorough cleaning. Dowell has this experience with over 15 years and 10,000 boilers alone to their credit. In saving downtime, Dowell often cleans equipment while it is in operation.

Next, these companies want to be sure their men and equipment have the greatest possible protection. Dowell excels here, too. For safety is foremost in the Dowell engineer's mind. Thoroughly trained, he uses only the latest safety methods and equipment. He works closely with your safety personnel to establish safest possible working procedures.

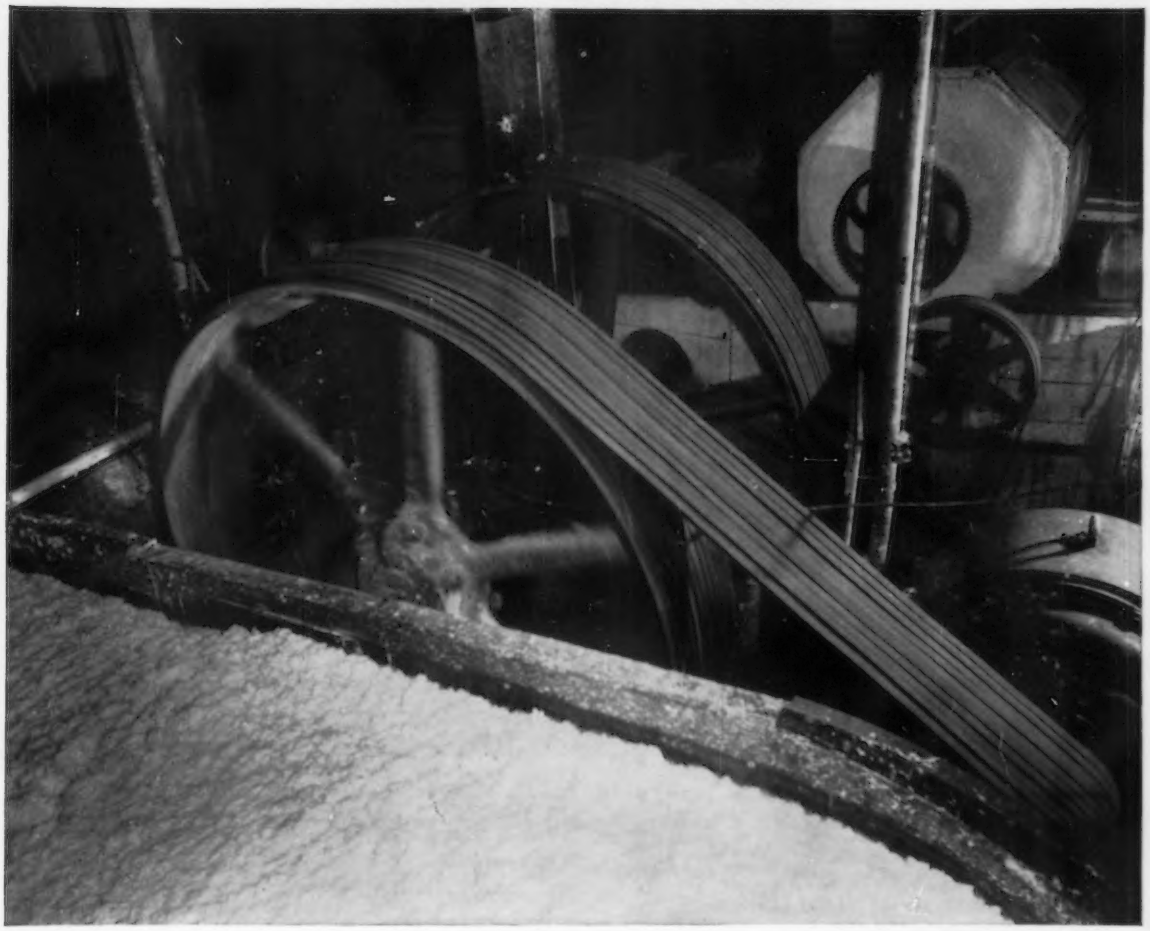
Be sure you are getting maximum results with maximum protection in your chemical cleaning.

Call the Dowell office near you. Dowell engineers are ready to discuss and help you with your cleaning problems any time, at no obligation. Or write Dowell Incorporated, Tulsa 1, Oklahoma, Dept. F-63.

chemical cleaning service for industry **DOWELL**

A SERVICE SUBSIDIARY OF THE DOW CHEMICAL COMPANY

B.F.Goodrich



They cut production costs 25% with B. F. Goodrich V belts

A typical example of B. F. Goodrich improvement in rubber

All the pulp beaters in this paper mill used to be driven by flat leather belts connected to a line shaft. When the main belt broke down, production stopped for 24 hours. Some of these shutdowns cost the company several thousand dollars.

Then they switched to individual V belt drives, equipped with B. F. Goodrich Grommet belts. Two years later, when this picture was taken, the B. F. Goodrich Grommet V belts were still going strong, hadn't lost a minute of the paper mill's time. The plant superintendent estimates a 25% saving in production costs alone.

Grommets are two extra strong cord loops inside the belts, like twisted cables except that they're endless. Unlike ordinary belts, there are no center cords in the Grommet belt, so it is more flexible, can "give" temporarily and absorb shock loads.

Today's B. F. Goodrich V belts are the result of constant improvement—better processes for prestretching cords, for improving cord adhesion, for reducing internal heat and friction. In these and many other ways B. F. Goodrich belt engineers have successfully attacked the common causes of V belt failure, and in many cases, more than doubled or tripled belt service life.

Let your B. F. Goodrich distributor show you how this longer belt life, this ability to stand harder use, can reduce your V belt costs per year, make other savings in operating and maintenance costs. *B. F. Goodrich Industrial Products Company, Dept. M-573 Akron 18, Ohio.*

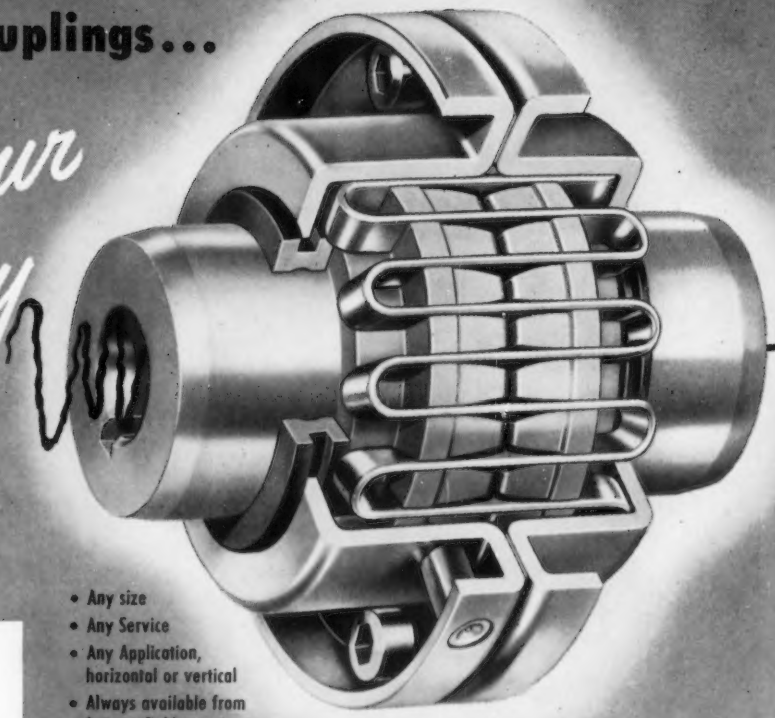
Grommet—T. M. The B. F. Goodrich Co.

B.F.Goodrich

INDUSTRIAL PRODUCTS

Falk Steelflex Couplings...

Protect your machinery in 2 ways



- Any size
- Any Service
- Any Application, horizontal or vertical
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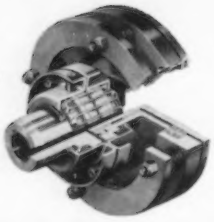
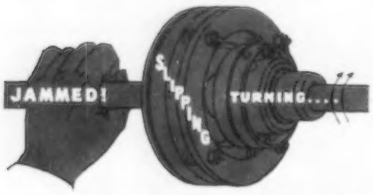


Falk Controlled Torque Couplings prevent damage from overloads

In applications where danger from overloads exists, use the FALK Type FT Controlled Torque Coupling. The Type FT has all the features and advantages of standard FALK Steelflex couplings—and, in addition, has an adjustable friction slip clutch, enabling the operator to set the coupling to slip at any predetermined overload.

This controlled-torque principle not only prevents transmission of dangerous shocks and limits overloads; it eliminates the breaking of shafts caused by jamming of driven equipment.

An outstanding advantage of the Type FT Coupling is that, as soon as the cause of the overload is removed, the entire coupling will rotate and transmit power without replacing parts or repairing coupling.



There's real economy in using Type FT Controlled Torque Couplings. Many users have reported that these couplings paid for themselves the very first time they slipped (under overload) because of the protection against damaged driving or driven machinery!

...cost less per year of service!

You get *double protection* when you connect your driving and driven machinery with a Falk Steelflex Coupling—the all-steel coupling with the exclusive grid-groove design! First, its *torsional resilience* smothers shock and vibration; and second, the Steelflex design prevents damage and lowered efficiency by accommodating shaft misalignment.

Why have increasing numbers of key men in industry standardized on Falk Steelflex Couplings? Their experience has proved that Falk Steelflex Couplings prolong the service life of their machinery... are trouble-free and need minimum maintenance... are easy to install, lubricate and disconnect... and *cost less per year of service* than ordinary couplings.

One basic Steelflex design—the type F, in its many sizes—is adaptable to more than 90% of all industrial applications. For applications involving danger from overloads, Modified Type FT Controlled Torque couplings (see column at left) are ideally suited. There are numerous other special or dual purpose Steelflex couplings for unusual applications. **Write to Department 247** for engineering bulletin, including selection and dimension tables.

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- Special Gear Drives
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- Contract Machining

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REMEMBER THESE DATES

JUNE 13-15: Summer Meeting Tech. Section, Canadian Pulp and Paper Assn., Manor Richelieu, Murray Bay, Que.

JULY 9-20: Fifth Statistical Conference co-sponsored by TAPPI and Tech. Sec., Canadian Pulp and Paper Assn., Queens University, Kingston, Ont.

SEPT. 11-13: Seventh Testing Conference, Hotel Loraine, Madison, Wis.

OCT. 22-25: Protective Packaging and Materials Handling Exposition, Kiel Auditorium, St. Louis, Mo.

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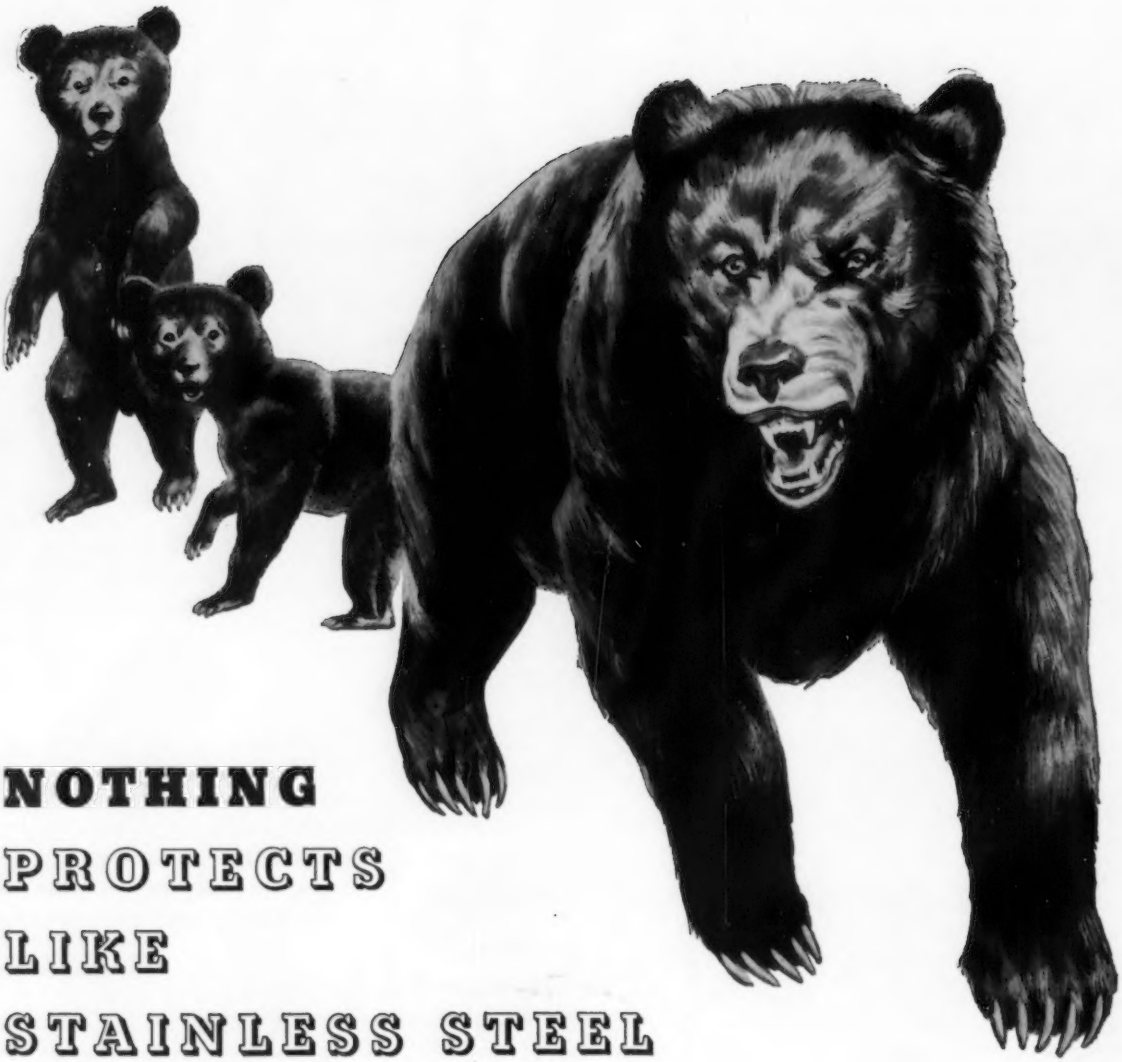

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36 pages of useful information on the applications and advantages of stainless steel in paper plant equipment of all types. Well illustrated—also contains a technical section of data on selection and fabrication, etc.

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Many materials are good-looking. Some are strong. Some resist corrosion. But not one other commercially-available material offers the same combination of beauty, high strength, high hardness and resistance to corrosion, heat and wear that stainless steel can give you. Not one has the ability to protect as completely, last as long and cost you as little in the long run.

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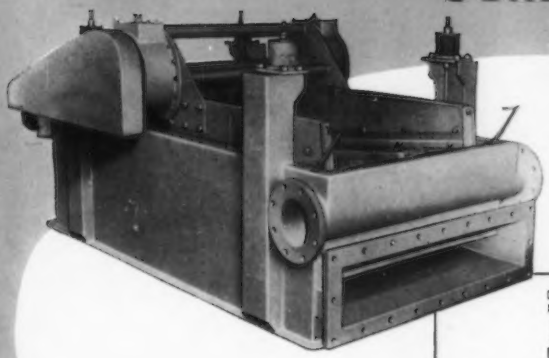
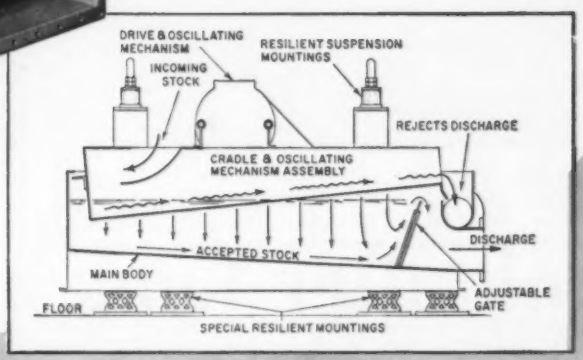


A product of Black-Clawson's stock preparation machinery division.



for many pulp, paper and board mill applications

The new Black-Clawson Gyro-Flote screen is a self-contained, flat plate vibratory unit which employs a gyroscopic principle of oscillation to provide a rapid, gentle action. A highly efficient screen, the Gyro-Flote recovers all usable fibre and rejects unusable material and trash.

In a groundwood pulp system it will serve as a bull screen or tailing screen. In a chemical or semi-chemical system, it is used as a knotter screen, and for paper machine screen rejects—also as a primary screen after the washers. It's especially effective in a waste paper cleaning system.

Gyro-Flote capacity depends on the application and size of perforations. Power input remarkably low.

Contact the Shartle Division for details on operation and performance.

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Cook after Cook after Cook...

Duplicated automatically at East Texas Pulp and Paper Co.

THE East Texas Pulp and Paper Company's new 300-ton mill at Evadale, Texas, uses Taylor Instruments to control their completely automatic processes. Pictured above are four digesters each of which has a separate set of automatic controls, panel-mounted for convenience. The control system provides:

1. An adjustable rate of rise of pressure and temperature.
2. A positive control of maximum cooking pressure.
3. Control of relief or "gas-off" by venting air and other non-combustible gases.
4. A method of blow back when necessary.
5. A record of top and bottom digester temperatures to check efficiency of circulation and gas relief.

All these functions are carried out automatically. To start the cooking cycle, the cook simply checks the steaming control set point and pushes the start button. This turns air on to the controllers, which relays air to the control valves as indicated by the instrument. The steaming controller maintains the proper steam valve position to achieve the desired rate of pressure rise. As the pressure comes up to the maximum value required, the steam valve is throttled back and the digester pressure is held until the cook pushes the blow-valve button, to blow down the digester.

The relief controller measures and maintains the temperature and pressure of the relief gases in definite relationship to the saturated steam temperature-pressure curve by throttling the relief valve. An excess of pressure causes the controller to open the gas-off valve to relieve air pressure.

This control system duplicates cook after cook with a minimum of attention from the operators. Adjustments of the cooking cycle can be made instantly merely by adjusting rate of rise and maximum pressure points.

To find out more about "Instrumentation by Taylor", call your Taylor Field Engineer, or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

• • •

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

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Aerial view of Thiele plant.

Cleaning equipment at mine.

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Water-Washed, Spray-Dried

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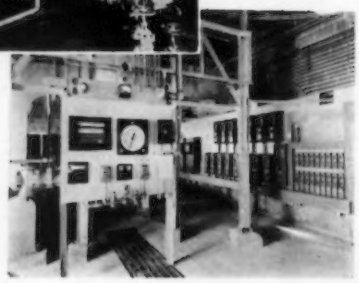
meet the most rigid requirements for • excellent color • high brightness • uniform low viscosity.



Modern instruments and controls for Spray Drying Plant.

THIELE PAPER CLAYS are closely controlled in quality.

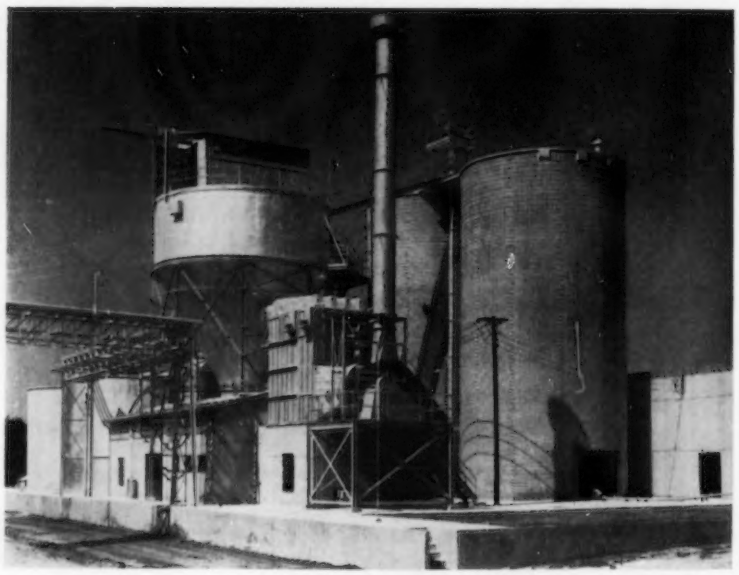
Extensive holdings throughout the heart of the Georgia clay belt give assurance of a dependable source of supply. Processing is done at Thiele's modern plant at Sandersville — where tremendous storage and latest processing facilities are available.

Thiele's new Spray Drying plant is second to none — providing users of Thiele Clays with such important benefits as—

- **Uniform Low Moisture Content**
- **Savings on Freight**
- **Improved Handling**
- **Easier Make-Down**

Thiele Can Help You Make A Better Product.

Write for full information and a sample of Thiele Kaolin Coating or Filler Clay for your particular use.



View of new Thiele Spray Drying Plant.

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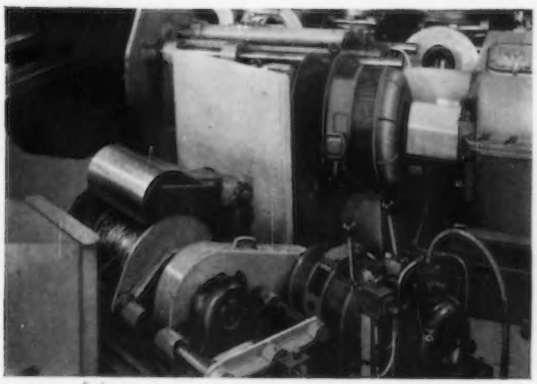
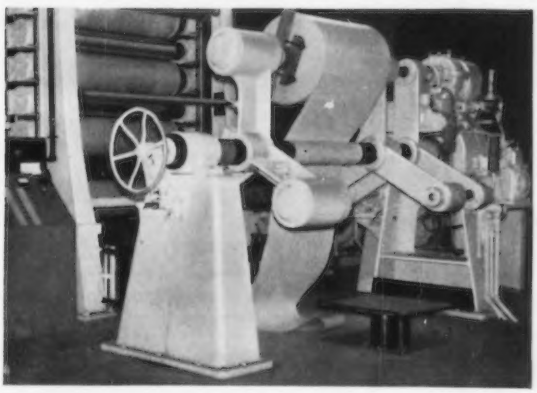


Metal slitter powered by Dynamatic Drives. Adjustable speed liquid cooled coupling used as main drive; Ajusto-Spede® Drives, with constant tension control, wind up the metal strips.



Completely Dynamatic driven paper super-calender. Adjustable speed liquid cooled couplings with Eddy-Current brakes drive the calender rolls and center rewinder. Dynamatic liquid cooled brake provides center unwind hold-back. Co-ordinated controls provide for wide-range adjustment of speed and tension.

Dynamatic Eddy-Current Drives with tension controls are used extensively in the fields of paper, rubber, textiles, ferrous and non-ferrous metals, plastics, and printing.

Combined with associated controls, Dynamatic Eddy-Current Drives provide automatic constant tension as the roll diameter changes on center rewinds and unwinds. Constant tension is maintained over a wide range of material delivery speeds without the use of dancer or follower rolls. Controls may be adjusted for tapered tension to increase or decrease tension automatically as the roll changes diameter.

Multi-range tension or tension adjustment over a wide range is easily accomplished at the operator's station to accommodate materials of various thicknesses or widths. Control modifications are available to provide for inertia compensation and other individual requirements. Dynamatic engineers are available for consultation on your problems.

Bulletins giving detailed information on Dynamatic Tension Control will be sent free at your request.

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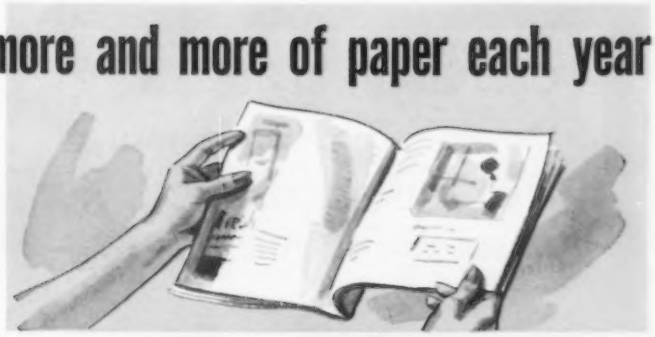
A Nopco Coating gives this magazine paper better pliability and printability, improved flow properties, smoother finish.



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A Nopco Surface Size gives meat wrap improved finish, scuff resistance, non-slip properties, blood resistance.

IMPROVED BENDING AT LOW TEMPERATURES, PLUS INK RECEPTIVITY

A Nopco Internal Size gives frozen food board greater moisture vapor resistance, greater gloss, improved liquid resistance.

NOPCO WAX SIZES AND COATINGS CAN HELP YOU MEET THESE DEMANDS

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Nopco's paper technicians have more than kept abreast of these increasing demands... have anticipated your needs with a complete and versatile line of coatings, and with both wax and rosin-wax sizes for internal and for surface use. A careful choice of these advanced paper chemicals can keep your products ready to meet demands you might have thought unreasonable only a few years ago.

In short, Nopco offers sizes and coatings that will equip every paper and board you make with the properties you need to keep your customers more than happy.

And with any or all of these goes the skilled counsel and wide experience of Nopco's paper technicians. They will welcome the opportunity to work with you on the toughest problems you have. Write today for their recommendations. Nopco Chemical Company, Harrison, N. J.

NOPCO

PLANTS: Harrison, N. J.
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. . . at savings up to 50% in material costs!

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And only Lukens offers a selection of 16 cladding and 11 backing metals—giving you practically an unlimited selection of cladding and backing combinations to meet any conceivable need.

For more information consult your equipment builders or write to Manager, Marketing Service, Lukens Steel Company, 844 Lukens Building, Coatesville, Pennsylvania. We'll show you in detail just why we say clad steel is the ideal material for long range economy.

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Producers of the Widest Range of Types and Sizes of Clad Steel Plates and Heads Available Anywhere

Mead's million-dollar research laboratory is the scene of constant pulp research. Here a highly trained research technician studies methods for adding strength to wood pulp with a view to improving paper quality.

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Where bulk, opacity, printability or absorbency is a part of your quality requirement, *Mead Bleached Soda* has been specifically developed to do these jobs. The world's largest producer of this grade, the Mead Corporation has been for years a reliable supplier to the market from its centrally located and completely modern pulp operation at Kingsport, Tennessee.

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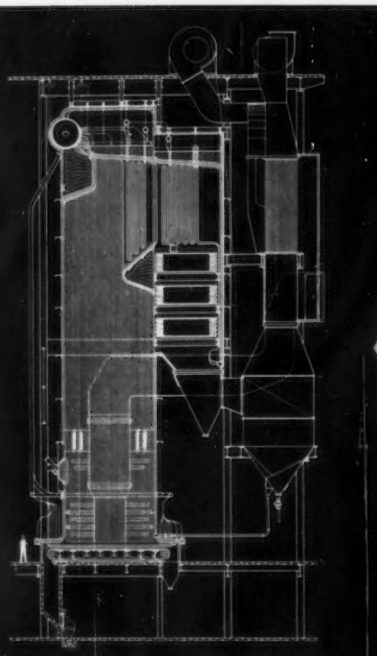
118 WEST FIRST STREET, DAYTON 2

MEAD *pulp*



This unit is designed to produce 450,000 lb of steam per hr at 1335 psig and 958F.

One unit, instead of two or more.

Burns bark, oil or gas alone or in combination.

Flash dries bark in suspension.

Burns bark in streams of turbulent preheated air introduced tangentially.

Residue bark burns evenly on grate of C-E Spreader Stoker.

Provides most complete and intimate fuel-air mixtures.

Burns oil or gas with C-E Tilting, Tangential Burners for Complete Control.

It's a POWER BOILER and BARK BURNER combined

Many mills use one or more separate power boilers to supplement the steam supply from their bark burning units.

The unit illustrated here is a combination of these two boiler types. It combines, in a single unit, sufficient capacity to meet the steam needs of the average mill, thus saving both space and money. It reduces steam and water piping requirements, decreases operation and maintenance costs, avoids duplication of controls and reflects an initial cost considerably less than that incurred for two separate boiler types having a comparable combined capacity.

In this new design the combination of the long established C-E Tilting, Tangential Burners with the service-proved C-E Spreader Stoker permits a freedom of choice in operation never before available. Now you can burn oil, gas and bark in the same furnace . . . efficiently, dependably and economically . . . alone or in combination. You take full advantage of your bark supply and use purchased fuel only to meet exceptional steam demands or when your bark supply is inadequate.

For further information, contact the C-E office nearest you. Or—if you prefer write or phone the C-E Paper Mill Division in New York. You can't go wrong—if you see C-E.

COMBUSTION ENGINEERING

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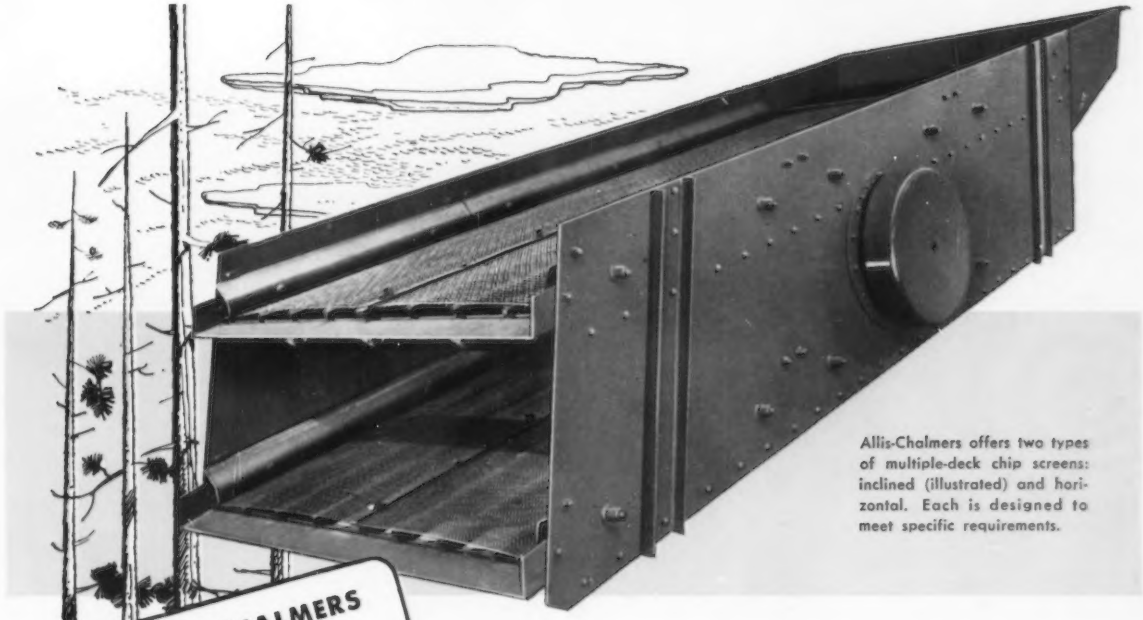
Canada: Combustion Engineering-Superheater Ltd.

STEAM GENERATING UNITS; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; DOMESTIC WATER HEATERS; SOIL PIPE



Allis-Chalmers offers two types of multiple-deck chip screens: inclined (illustrated) and horizontal. Each is designed to meet specific requirements.

ALLIS-CHALMERS

CHIP SCREENS

improve pulp quality ... increase yield

EVERY feature of this Allis-Chalmers chip screen has been designed to produce high yield of top quality pulp at low cost. The accurately balanced mechanism imparts a perfect circle throw to every portion of the screen surface to remove the highest possible percentage of odd-size chips, chip dust and dirt. Chip travel is uniform, stratification rapid. There's no damping of vibration—not even under heaviest loads.

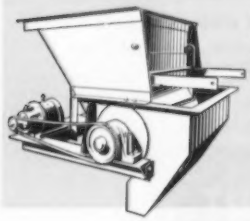
Feed Spout Increases Efficiency

Chips from conveyor or feeder are deflected by a spout in their downward fall. Slivers do not penetrate cloth — blinding is minimized. Blinding may be further reduced by the installation of a *Sta-Kleen* anti-blinding device installed on the lower deck.

Other Features

Ample space between decks provides clearance for large bulk of chips and affords "working room" when changing cloth. Simple two-bearing mechanism cuts power requirements and reduces maintenance.

For complete information, see your A-C representative or write for Bulletin 07B6353B. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

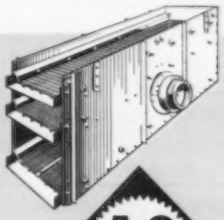


Chip Screen Feeder Improves Screen Efficiency

This auxiliary equipment eliminates surges in feed and provides full width feeding. Screening is more efficient and more profitable, because all of the screen area works full time.

Triple-Deck Screen Multiplies Operating Advantages

Triple-deck *Ripl-Flo* screen, with feed spout, removes slivers on the top deck. Sculping done on second deck relieves third deck, so that more pin chips may be reclaimed and more chip dust and dirt removed.

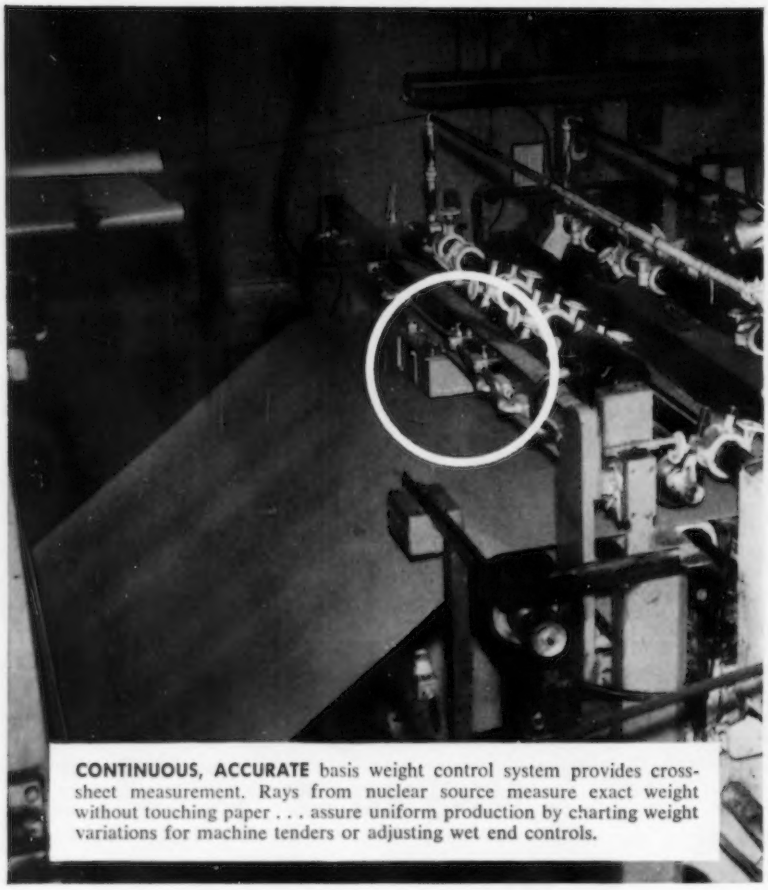


Ripl-Flo and *Sta-Kleen* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

A-5014



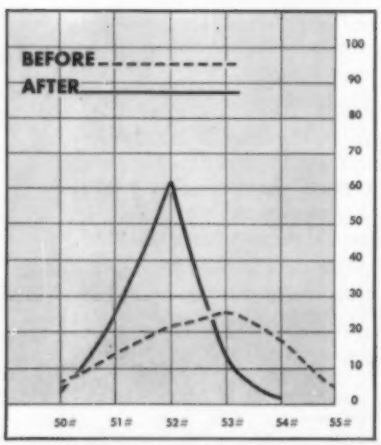
CONTINUOUS, ACCURATE basis weight control system provides cross-sheet measurement. Rays from nuclear source measure exact weight without touching paper . . . assure uniform production by charting weight variations for machine tenders or adjusting wet end controls.

TARGET SELECTOR is adjusted to proper weight specification for each order. It then acts as constant guide for machine tender at the wet end.

STRIP CHART RECORDERS present wet and dry end weights continuously. Fast speed recorders give expanded profile readings. Console design has drawer construction for easier maintenance.

INCREASE QUALITY OF YOUR PAPER PRODUCTION

with Curtiss-Wright Control Systems



BEFORE, when hand-weighted tear sheets are used for control, weights vary greatly. **AFTER** installation of Curtiss-Wright System, uniformity sharply increases.

With Curtiss-Wright Basis Weight Control Systems installed on both wet and dry ends, it is possible to increase production on specification as much as 30% by reducing weight variations in both the machine and profile directions.

Also, wet and dry end measurement permits accurate settings on all moisture extraction equipment – assuring the sheet will enter the driers in the driest possible condition. Machine speed may be increased or steam requirements lowered.

For details of installations tailored to your needs, write Industrial Controls Dept., Curtiss-Wright Electronics Division, Carlstadt, N. J.

WEST COAST REPRESENTATIVE:
Western Dynamics Co., 444 Dexter Horton Bldg., Seattle 4, Wash.

CANADIAN REPRESENTATIVE:
Electronics Associates, Ltd., 4616 Yonge St., Willowdale, Ont.

Systems Frieseke & Hoepfner

ELECTRONICS DIVISION
CURTISS-WRIGHT
CORPORATION • CARLSTADT, N. J.

Looks like you could eat it right off the page. This high-fidelity detail, texture and color are typical of what your customers can expect in reproduction from papers processed with Glidden Alpha Protein. (Photo courtesy Durkee Famous Foods)

Tempting reproduction...

SHOWN ON PAPER PROCESSED WITH GLIDDEN ALPHA PROTEIN®

Leading paper manufacturers are now using large volumes of Glidden *Alpha Protein*, the high solids coating adhesive, to improve the printing surface of offset papers and to increase production.

Glidden *Alpha Protein* helps to improve opacity, whiteness and makes possible smoother, more uniform paper which faithfully reproduces fine details and color with depth and brilliance. Press runs are faster, less ink is used, picking is reduced to a minimum.

Users report the extra solids, when using *Alpha Protein* in their coating, result in production increases up to 15 per cent. More solids *mean less drying time*, permit higher machine speeds. And *Alpha Protein* machine-coated papers are being produced that are equal in quality to costlier conversion-coated papers.

Write for details about Glidden Technical Service—it has helped many manufacturers improve quality, speed production and cut costs with *Alpha Protein*.

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THE GLIDDEN COMPANY

CHEMURGY DIVISION • 1825 N. LARAMIE STREET • CHICAGO 39, ILLINOIS

QUALITY Glidden PRODUCTS

No more stock valve leakage at this mill

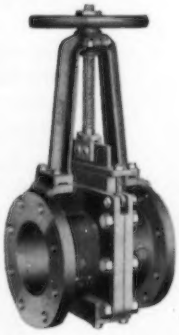
THE CASE HISTORY—Based on 8 years of trouble-free performance from Crane pulp stock valves, this large Southern mill is replacing all other stock valves with Crane as quickly as possible.

Here's why this mill is standardizing on Crane throughout: the other makes used in the past 8 years have caused a constant leakage problem. Small accumulations of fibers were piling up under their discs and preventing closure. Also, they were causing build-up, or "dead" stock, in low velocity lines and blocking flow.

With Crane valves none of these troubles were found. Typical are the Crane No. 1427 12- and 14-inch iron body valves shown above—with 8 years' rock-bottom maintenance on lines to stock pump and storage chest at fourth stage in the bleach plant. Through their shearing action disc against deep notches in the body, Crane stock valves seat cleanly and tightly without clogging and leaking.

And with Crane unrestricted flow design, with square, spacious center passage, there are no pockets where pulp impaction or "dead" stock can pile up. Performance like this is typical of Crane valves—for Crane design and Crane quality are based on over a century of valve engineering experience in all industries.

Crane iron body pulp stock valves are available in sizes up to 24 inches, including rubber lined, with a variety of trims. And you can now order all-new Crane stainless steel stock valves with short face-to-face design—low-cost and lightweight—for your corrosive stock lines.



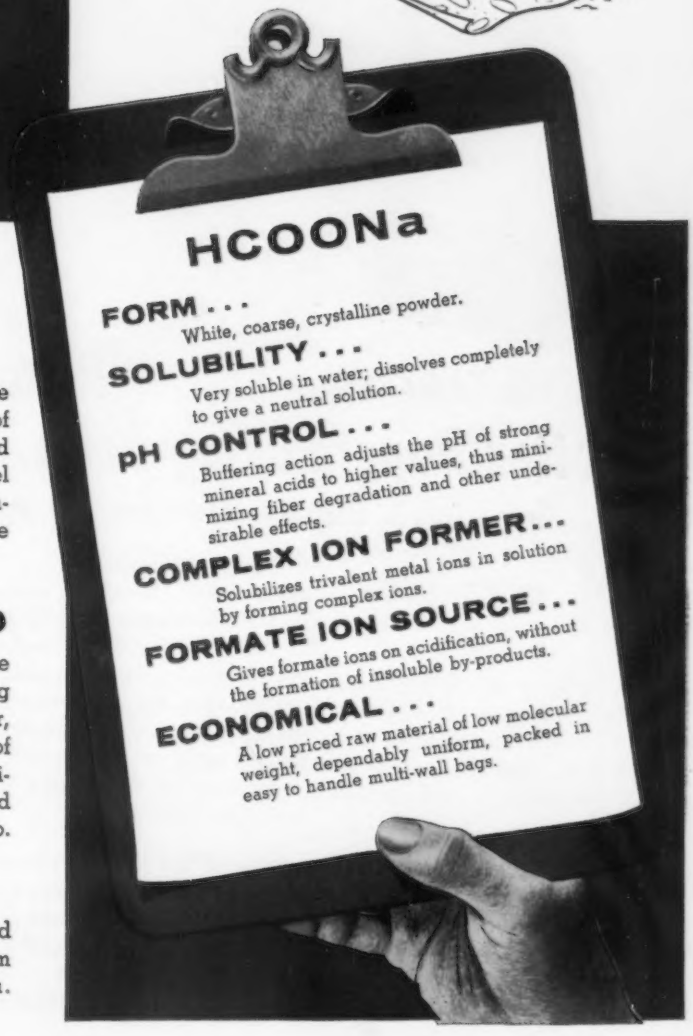
Call your local Crane Representative for help in specifying and ordering, or write to address below.

CRANE VALVES & FITTINGS

PIPE • KITCHENS • PLUMBING • HEATING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

Can these features of Heyden SODIUM FORMATE help your process?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FORM . . .
White, coarse, crystalline powder.
SOLUBILITY . . .
Very soluble in water; dissolves completely to give a neutral solution.
pH CONTROL . . .
Buffering action adjusts the pH of strong mineral acids to higher values, thus minimizing fiber degradation and other undesirable effects.
COMPLEX ION FORMER . . .
Solubilizes trivalent metal ions in solution by forming complex ions.
FORMATE ION SOURCE . . .
Gives formate ions on acidification, without the formation of insoluble by-products.
ECONOMICAL . . .
A low priced raw material of low molecular weight, dependably uniform, packed in easy to handle multi-wall bags.

Sodium Formate finds widespread use in the chrome tanning of leather, water-proofing of wallpaper, dyeing of carbonized wool and other materials, acidizing of oil wells, nickel plating, blueprint developers, and as an intermediate and dehydrating catalyst in the synthesis of organic chemicals.

Heyden FORMIC ACID

A uniform product of high quality used in the dyeing and finishing of textiles, the tanning and dyeing of leather, for coagulating rubber, and as a raw material for the manufacture of drugs, odorants, fumigants, catalysts, plasticizers, and water-proofing compcunds. Shipped in 525 lb. stainless steel drums and 125 lb. carboys. Technical bulletin available.

•

Your nearest Heyden sales office would welcome the opportunity to discuss Sodium Formate and Formic Acid with you. Samples available on request.

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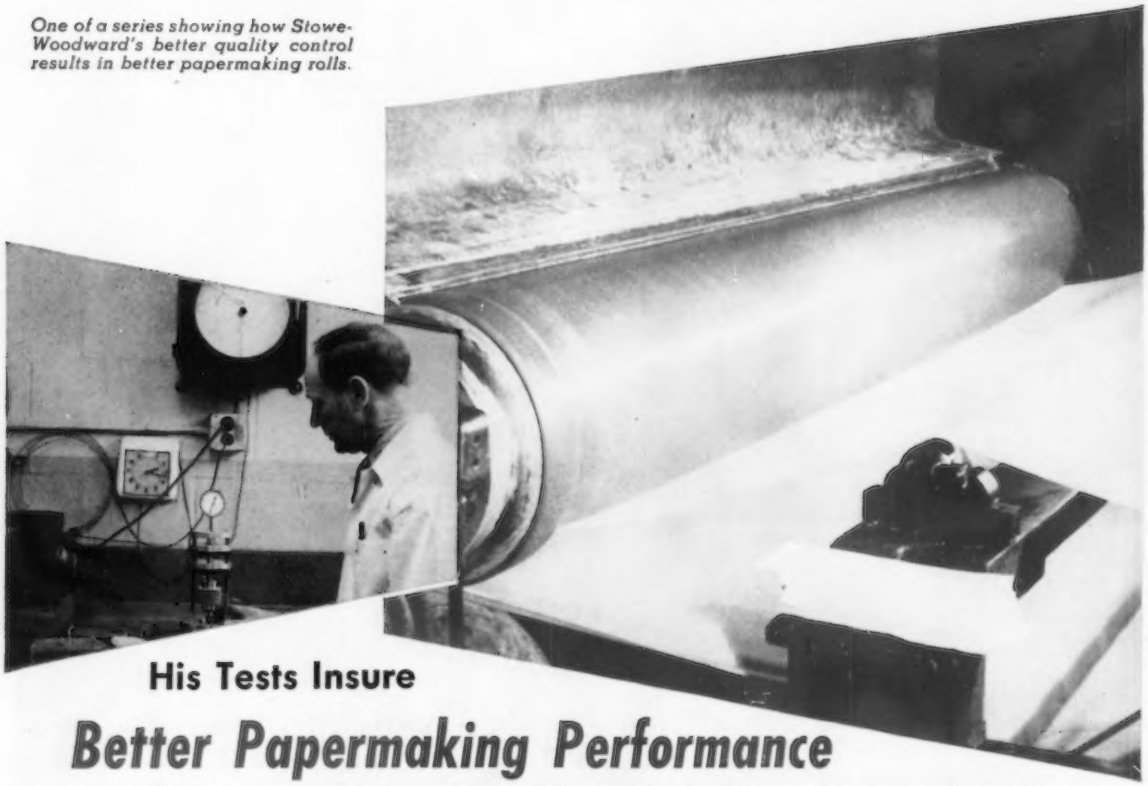
One of a series showing how Stowe-Woodward's better quality control results in better papermaking rolls.



His Tests Insure

Better Papermaking Performance

for *every* Stowe-Woodward Rubber Covered Roll

If Stowe-Woodward rolls were delivered from "stock" . . . or made from "stocked" batches of rubber . . . such precise laboratory checking procedure of every roll would be unnecessary. But *every* Stowe-Woodward roll is customed to an individual papermaker's needs . . . and to insure papermaking performance, the laboratory technician duplicates the vulcanizing process with miniature equipment and verifies by actual test the performance characteristics specified. In this photo he is checking the density of a "plug" from a compound prepared for a Stonite press roll.

Stowe-Woodward's unusual degree of quality control can increase paper production in your plant . . . and your Stowe-Woodward Sales Engineer is well qualified to help you solve any rubber roll problem. Why don't you consult him.

"RUBBER ROLLS with a REPUTATION"

S-W INC.

STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN • NEWTON 64, MASS. • GRIFFIN, GEORGIA

Antitrust Activity

The new F.T.C. charge that Scott Paper Co. violated antitrust merger laws with its acquisition of Soundview Pulp, Detroit Sulphate, and Hollingsworth & Whitney is reported in detail on the news pages of this issue. The complaint as worded by the Commission holds that potential competition between Scott and the three companies named has been eliminated. With good right, Scott people feel this is stretching the law a little far, as Soundview never had a paper mill and the other two firms were neither equipped for tissue manufacture nor did they ever give any indication of a desire to enter the tissue field.

New Growth Listed

Despite talk of overgrowth, paper and pulp companies continue expansion plans. Many new moves are described in this issue.

Orders Off A Little

Unfilled orders at paperboard mills totaled 490,000 tons last week, lowest level in 14 months and 9.3 per cent under the order figure for the week ended May 19. In contrast, a 725,000 ton backlog was experienced in early November, 1955, the current all-time high mark.

All Rumor?

National Gypsum chairman, Melvin H. Baker denied, several days ago, that his company was working to acquire the 10 roofing mills of Certain-Teed Products Corp. to complete National's building materials line.

Sweden Lowers Estimate

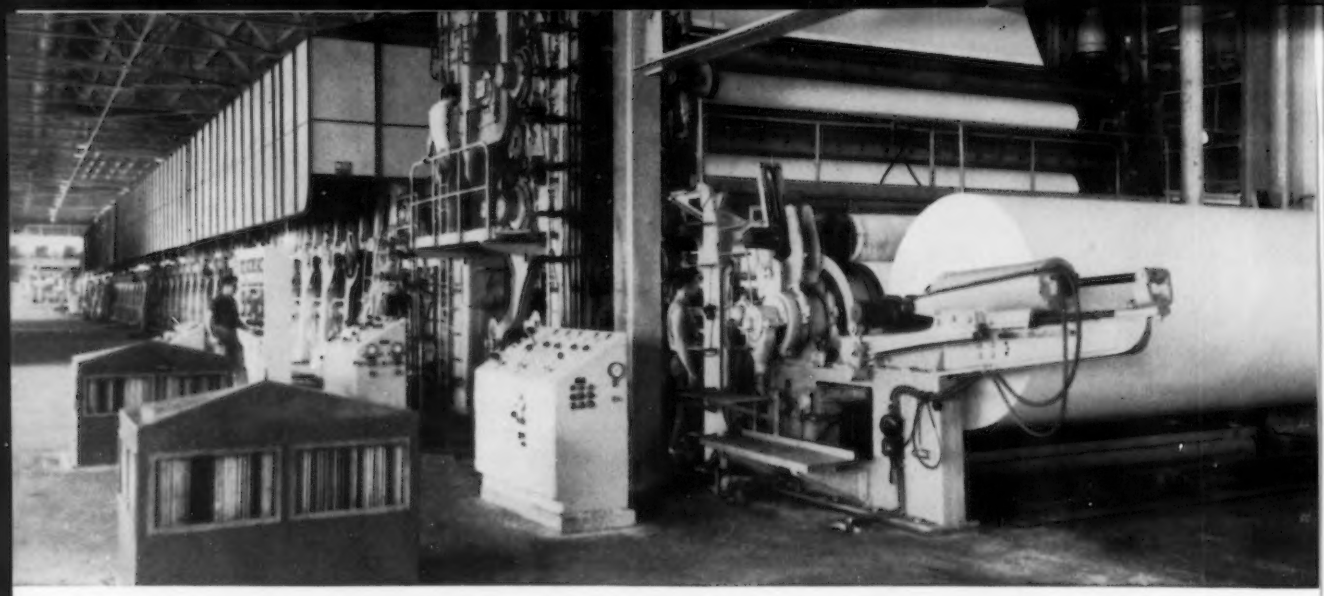
A downward revision of original estimates for the production of Swedish forest products was made by trade sources in that country a few days ago. Swedish chemical pulp exports are slated to rise 5 per cent this year, while export prices for both pulp and paper this year will most likely be 4 per cent higher than in 1955.

More Strikes This Year

Labor accord in new contract settlements may come a little hard for management this year, Department of Labor statistics indicate. Strikes in the first four months of 1956 produced more lost working days than the totals for the similar months in every year since 1952. This year's figure of 7,700,000 lost days compares with 5,410,000 for last year, and 4,610,000 in 1954.

No Dissolving Pulp Price Cuts

Answering suggestions from financial circles that recent price slashes by rayon tire cord producers might pressure Rayonier to reduce its own rayon pulp price, president Clyde B. Morgan stated cord producers made a mistake by cutting their selling levels, that Rayonier, with fixed raw material costs, is thinking of raising not lowering its price. Mr. Morgan also pointed out that expansion throughout the world has helped his company weather fluctuations of the business cycle in any one country, and that Rayonier now ships 40 per cent of its production overseas.



How Stainless Steel guards paper purity at East Texas Pulp and Paper Co.

This mill produces top quality bleached kraft market pulp and bleached board that is used for milk cartons, frozen food containers, cups, plates and other uses. It goes without saying that the very highest purity standards must be maintained. In the machine room, a good share of this job is shouldered by USS Stainless Steel.

Pulp stock is filtered through Stainless screens, washed over Stainless drums, and fed through Stainless Steel lines toward the final rollers. Coatings and dyes are prepared in large Stainless Steel tanks. There is little question that without Stainless Steel it would be impossible to maintain the present purity standards.

No other material can equal Stainless Steel for its *combination* of desirable properties: corrosion resistance, cleanability, strength and smoothness of finish. Think of Stainless when you design; think of USS Stainless when you specify.

These dye tanks are made from Stainless Steel to prevent color contamination.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

USS

UNITED STATES STEEL

$60,000,000 Pulp Mill for Saskatchewan

Plans for establishment of a $60 million kraft pulp mill in Saskatchewan's Prince Albert Forest region were announced by Premier T. C. Douglas and Vancouver industrialist Robert G. Campbell.

Construction of the mill, to be known as Waskesiu Forest Products, Ltd., will begin this fall 10 miles northeast of Prince Albert if financing is completed by then.

Initial capacity is to be 600 tons a day or 210,000 tons annually. The company will have access to 10 million acres of timber in the area northeast of Prince Albert. Production is scheduled to start some time in 1958.

The project, called the largest industrial venture ever planned for Saskatchewan, would include construction of a private logging railway estimated by Mr. Campbell to cost $5 million.

Canadians would hold control of the company's equity stock, which would provide about 40 percent of the capital. "The biggest block of equity will be in the hands of the company acting as sales agent and consumer for the entire production of this mill," Mr. Campbell said. He declined to identify the company beyond stating that it was a United States concern.

The Vancouver industrialist heads R. Campbell & Associates, principals in the project. He also formed the Campbell Construction Co., Ltd., Vancouver, and is president of Inland Chemical Canada, Ltd.

Columbus, Miss., Chosen For New $30 Million Kraft Mill

A site in Lowndes County near Columbus, Miss., has been selected for a new $30 million kraft pulp and paperboard mill. The mill will be built by the Mississippi Pulp and Paper Co., a firm recently incorporated in Delaware. The principal men involved in this venture have not yet revealed their identity. Estimated capacity of the mill will be 500 tons a day. It is said that production will specialize mainly in kraft linerboard and corrugating medium.

The exact site of the mill will be five miles northwest of Columbus, a city of 17,000 people on a 2500 acre tract on the Tombigbee River. In addition to the mill tract, the new company has optioned about 75,000 acres of timber in the vicinity and is reported to be lining up further acreage.

Tentative approval of plans for treatment and disposal of waste has been secured from the Mississippi Game and Fish Commission. No definite date on beginning construction was given but it is estimated the plant will be ready for operation early in 1959.

Representatives of the new industry said they selected Columbus not only for its availability of ample wood and water but rather particularly for its excellent north, south, east, and west railway routes.

The announcement of the new industry was made in Columbus, May 29 by Gov. J. P. Coleman, Mayor W. J. Propst, state Senator William G. Burgin Jr. and the Industrial Development Committee of the chamber of commerce.

New $1,250,000 Woodroom For MacMillan

An extra $1,250,000 will be expended at the $42 million pulp mill of MacMillan & Bloedel, Ltd., at Harmac, B. C., H. R. MacMillan announced to the Chamber of Commerce at Nanaimo, B. C.

Mr. MacMillan said the sum will be spent on a woodroom which will enable a fuller utilization of wood products, particularly among small landowners. The new woodroom will provide a cordwood market for people within a 50-mile radius of Nanaimo, from Goldstream beyond Malahat to Buckley Bay, near Courtenay, B. C.

$1 Million Addition At Everett

Expenditures of $1 million for additional equipment in the Everett plant of Scott Paper Co. has been announced at Everett by Raymond C. Mateer, executive vice president of the company. Mr. Mateer said the money will be spent for a drum barker, bridge crane, cut-off saws, silos for chip storage and a building to house this addition to the pulp mill's production operations.

Also he announced plans for equipment for recovery of additional pulp fibers.

Corner Brook Fire Cuts June Newsprint Delivery

Bowaters Paper Co. will cut June deliveries by 10 per cent to North American customers, it is reported. The reduction, follows losses of over 3,000 tons of newsprint production after a "serious fire broke out in the power plant of the company's Corner Brook Mill in Newfoundland."

The Corner Brook mill normally turns out 1,000 tons of newsprint and 150 tons of sulphite pulp daily on seven machines.

The latest month-long cut-back in deliveries comes on top of a 10 per cent reduction in newsprint quotas which Bowaters has had in effect since last January.

In March, the company lost another 6,000 tons in newsprint production during a six-day strike at the same mill.

Filer City Expansion Aims For '57 Start-Up

American Box Board's construction program for its new mill facilities to produce bleached kraft food board is on schedule, with the virtual completion of the new service buildings at the South end of its mill properties in Filer City, Mich. These buildings provide some 30,000 square feet of floor space and were erected by the Miller Davis Co. of Kalamazoo, as an initial step in the program, and provided for the removal of present service shops which stand on the selected site for the new mill building.

Sumner S. Sollitt Co., Chicago, has been selected as the general contractor, and the contract for the new mill construction was let on May 25, Sandwell & Co., Seattle, the engineer in this new expansion. Plans call for the new mill to be in operation the latter part of next year.

Demolition of an original power plant building adjacent to the present power house will start on June 4th and will pave the way to the erection of a new addition which will house a third electrical generator. This new generator will be the largest of the three and be rated at 7500 kw. The two present generators, installed in recent expansions, are rated at 5000 kw. each and provide enough power to furnish the electrical needs of a community of 25,000 homes. A Badenhousen boiler, part of the present stand by power equipment, is being converted to burn waste bark and will be oil fired.

The removal of old recovery plant buildings is scheduled to start in midsummer and will be replaced by a new multi-million dollar recovery plant, which will permit the recovery of chemicals from pulp mill effluent which is now ponded on company property across Lake Manistee.

S.C. Amends Acreage Law To Let In Bowaters Mill

South Carolina's General Assembly has opened the door for Bowaters Southern Paper Corp.'s new Catawba kraft pulp mill by agreeing to enlarge legal land ownership by aliens from 500 acres to 500,000 acres.

The action was taken at a special session which opened June 4. The old limit of 500 acres for alien owners was in the state constitution since 1896.

Last week, Sir Eric Bowater, foreseeing this fast legislative action by the state, declared that construction of the new S. C. mill would begin immediately on a site near Rock Hill on the Catawba River near the North Carolina border. (See *Paper Trade JOURNAL*, May 14, page 29.)

Initial capacity of the new mill will be 100,000 tons of pulp annually. A paper mill to manufacture packaging papers may be added to the installation at a later date.

3M to Add New Paper Machine at Hartford City

Part of the $1.5 million that Minnesota Mining & Manufacturing Co. will spend on its paper mill at Hartford City, Ind. will go for a third fourdrinier paper machine.

The two present paper machines are to be largely rebuilt and new stock preparation equipment installed along with some warehousing.

The modernization program will be under the direction of Roy R. McKenzie, division engineer of 3M's Graphic Products Group, the headquarters of which are in St. Paul, Minn.

Mr. Kraning said the firm will continue manufacturing operations at the Hartford City mill while the construction work is in progress.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending May 26, 1956, was 101.1 percent, compared with 100.1 percent, revised, for the preceding week. The ratio was 99.6 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending May 26, 1956, was 99 percent, compared with 97 percent for the preceding week and 98 percent for the corresponding week last year.

(Detailed statistics on page 68).

$18,000,000 Expansion Part Of Camp Union Merger

Included in the merger plan of Union Bag & Paper Corp. and Camp Mfg. Co., reported last week, is a provision to spend $18 million on an expansion of Camp's pulp and paper mill in Franklin, Va. The new equipment will boost Camp's output to 600 tons daily by 1959. Currency capacity at Franklin is 375 tons a day.

Hammond Lumber Offers Shares to Ga.-Pacific

Hammond Lumber Co. announced recently in San Francisco that its major stockholders have granted Georgia-Pacific Corp. an option to purchase their capital shares at $310 a share.

Hammond recently entered the news of the pulp and paper world when its law suit with Long-Bell Lumber Co. was labelled a major hindrance to agreement on Long-Bell's merger with International Paper Co.

Georgia-Pacific is currently erecting a kraft pulp and board mill in Toledo, Oregon.

Safety Council Pubilshes Supervisors' Manual

A "Supervisors Safety Manual" has been published by the National Safety Council. Written by staff engineers of the Council's industrial department and carefully reviewed by safety experts from business, industry and government, the manual provides foremen with a comprehensive guide to all phases of industrial safety.

The manual can be used as a text for group training or self study or as a reference work to solve most of the general safety problems encountered by the foreman in his work day. It provides him with a basic knowledge of accident prevention techniques and human relations know-how.

The manual is illustrated with numerous photographs and drawings in its 354 pages. It is available to Council members for $3.25. Non-member prices are double. For a brochure giving a complete list of the contents and quantity prices, write the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Manchester Builds Warehouse

Manchester Board and Paper Co. is building a $150,000 addition to the warehouse at its Seaboard mill, Richmond, Va.

Frank E. Brown, president, said that the one-story should be completed by late fall. The new construction will include 55,000 sq. ft. of floor space. It will be at the north end of the mill.

Scott Paper Co. Charged With Anti-Trust Violations

Scott Paper Co. has been charged by the Federal Trade Commission with violating the anti-trust laws by its acquisition in recent years of Soundview Pulp Co. Detroit Sulphite Pulp and Paper Co. and Hollingsworth and Whitney Co. The charge refers to violation of the so-called anti merger section of the Clayton Anti-trust Act.

The F.T.C. also charged that Scott's "constant and continuous acquisitions of companies" and their conversion to the production of Scott products are unfair methods of competition in violation of the Federal Trade Commission Act.

An F.T.C. hearing for Scott is slated for August 15 in Chester.

Capacity Sharply Increased

As a result of the acquisitions of the manufacturers of pulp, paper and finished products, the F.T.C. said, Scott now has 10 pulp mills with a capacity of 600 tons in 1950. It now has 44 paper-making machines making Scott brand paper products compared with 25 in 1950, and its increased timber resources supply the pulp wood requirements of the mills.

Scott's share of the sanitary paper industry the commission declared, has risen from 30 percent in 1950 to 38 percent in 1955. Its nearest competitor's market share in 1955 was 11 percent compared with 10 percent in 1950, the commission added. And in 1955, only three market competitors in the sanitary paper industry had more than 6 percent of the market, the F.T.C. claimed.

The increased concentration of resources, mills, converting facilities has tended to create a monopoly in Scott and has enchanced its competitive advantage over others to the detriment of competition, the commission charged. The agency added that potential competition between Scott and the three acquired firms has been eliminated.

"If any action is brought by the Federal Trade Commission, it will be vigorously defended by the company," Scott has declared.

Sweden's Pulp Production May Rise 5% This Year

The revised forecasts for the Swedish forest industry's output and exports in 1956 indicates a downward adjustment of the original estimates for the production of forest products, says the Swedish business weekly Affärsvärlden in its latest market review. No major changes are expected for other groups of forest products.

Exports of chemical pulp are estimated to advance by 100,000 tons over 1955 to some 2,070,000 tons, while shipments of mechanical pulp are likely to reach 410,000 tons, as against 385,000 tons in 1955. The growing demand both at home and abroad is to be met through a further switch-over to continuous operation, which will make possible an increase in output of the same order as in 1955, i.e., 150,000 tons or 5 per cent for chemical pulp. Exports of newsprint are expected to rise by 23,000 to 220,000 tons and other kinds of paper and board by 21,000 to 650,000 tons, parallel with an increase of nearly 100,000 tons for the aggregate output of the paper industry. Export prices for pulp and paper are likely to be 4 per cent higher than in 1955.

Riegel Runs Specialty Trials at Idle N.H. Mill

Riegel Paper Corp. has started experimental operations on a paper machine in the idle paper mill of Allied-Amoskeag Corp. in Manchester, N.H. The purpose of the project is to determine the feasibility of operating the mill to produce base-paper for leather-like products, shoe specialties, and special industrial and technical papers.

The future of the venture will depend on the outcome of this trial run.

Dr. W. A. Schenck, assistant manager of Riegel's Upper Mills in Riegelsville, N.J. is in charge of the project and assisting him, on temporary leave to the Manchester operation are:

Superintendent George M. Suydam; Asst. Superintendent L. K. Walter; Office Manager W. W. Seguine; Master Mechanic Harold Woolf; and Chemists J. W. Judge and J. C. Eaton.

C-Z Opens Bids for New Camas Recovery Bldg.

Crown-Zellerbach has asked five general contractors to bid for the construction of a building to house the new kraft black liquor recovery furnace at the Camas, Wash. mill.

W. M. Compton, Jr.

Cameron Machine Under New Ownership

The Cameron Machine Co., Brooklyn, N. Y. has been sold. The company, formerly a privately owned corporation held by Mrs. James A. Cameron, widow of the founder, has been purchased by a group headed by Wilson M. Compton, Jr. Jacob Schapiro, chairman of the board and acting president, announced that Mr. Compton has been appointed president. Mr. Schapiro, associated with the company for over 40 years, will continue as a member of the board.

Mr. Compton was formerly associated with the U. S. Plywood Corporation of New York City and Seattle, Wash. Prior to that he was with Reichhold Chemicals, Inc.

The Cameron Machine Co., founded in 1906, is a leading manufacturer of slitting and roll winding machinery. It is one of Brooklyn's oldest manufacturing companies, having maintained offices and manufacturing facilities at the 61 Poplar Street address for nearly 50 years. Three years ago the company constructed a plant in Dover, N. J. to extend its manufacturing operations.

OBITUARIES

Charles J. Grant, 66, died on May 26 at the Dobbs Ferry, (N. Y.) Hospital.

Charles J. Grant began his career in the paper industry with the Strathmore Paper Co. of West Springfield, Mass. and, after rising steadily in this field, retired a year ago as an executive of the Fraser Paper Co., Ltd., of New York. In World War II, Mr. Grant was chief administrator of the fine paper division of the Office of Price Administration and was recalled to Washington for similar work during the Korean War. He was a member of the Paper Trade Ass'n. and the Writing Paper Manufacturers Ass'n.

Joseph J. Schafer, 55, supervisor of converting at the Northern Paper Mills, Green Bay, Wis., died May 3.

PAPER PEOPLE

Hapco Officials Advanced

Two officials of Halifax Paper Co. have been promoted and a third named to its Board of Directors.

Kirkwood F. Adams, a vice president and division manager, was advanced to the post of executive vice president and division manager; H. W. Ellerson, Jr., general superintendent of the Roanoke Rapids plant, was advanced to a vice presidency and K. D. Running, superintendent of the plant's pulp mill, was named to the board of directors. Adams and Ellerson were already members of the board of directors.

Mr. Adams came to Roanoke Rapids in 1945 as resident manager of the plant. Prior to that he was Albemarle Paper Manufacturing Co. of Richmond, parent organization of the Roanoke Rapids plant, from 1926 until 1945.

Mr. Ellerson joined the firm at Roanoke Rapids in 1940 as a chemist. Later he was promoted to personnel manager, followed by a period in which he served in various supervisory positions until he became general superintendent. He will continue in that capacity. He went with Albemarle about a year before coming to Roanoke Rapids.

Mr. Running came to Roanoke Rapids in 1948 and took over the position of pulp mill superintendent. He also will continue in that capacity.

Receives National Award

J. D. Zellerbach, president of Crown Zellechbach Corp., has been selected to receive the 1956 Business Statesman of the Year award given annually by the National Sales Executives, Inc. Mr. Zellerbach was presented the honor at the group's annual meeting on June 4.

Refining Department Changes at Ecusta

Three personnel changes in the refining department at Ecusta Paper Co., Pisgah Forest, N. C. were recently accomplished:

Frank J. Patton, former refining department superintendent, has been transferred to the mill office for special assignments.

Enno F. Camenzind has been appointed superintendent of the department, replacing Mr. Patton.

Roy A. Fisher has been appointed a foreman in the refining department to replace Mr. Camenzind.

Dr. Alan H. Vroom

Heads Consolidated's Research

Coinciding with the announcement of a new million dollar research centre to be built this year at Grand'Mere is the announcement by G. M. Hobart, president of the Consolidated Paper Corp. Ltd. of the appointment of Dr. Alan H. Vroom as director of research for the corporation.

Dr. Vroom joined Consolidated as assistant director of research in January, 1955, and has been responsible for the planning and organization of the new Research and Development Centre to be located at Grand'Mere.

Brownell Succeeds Dixon At Ecusta Paper Corp.

Philip C. Brownell has been named general manager of the Ecusta Paper Div. of Ecusta Paper Corp., Pisgah Forest, N. C.

At the same time it was announced that Lawrence F. Dixon, vice president of Ecusta Paper Corp. and general manager of the division, was resigning for reasons of health.

Mr. Brownell, who is also a vice president of Ecusta, joined the company in 1947 as counsel. He has been associated with executive activities of the company and has most recently been an assistant general manager of the paper division.

Mr. Dixon was an associate of the late Harry H. Straus in the early work of developing an American-made cigarette paper. He joined Mr. Straus in 1935 and was chiefly responsible for developing a domestic flax supply which could be used for paper-making. Mr. Dixon was active in many phases of this pioneer development. In 1951 he was named a vice-president of Ecusta Paper Corp. and general manager of the paper division.

Laimbeer Succeeds Parker At General Foods Carton

Wesby R. Parker, general manager of the Post Cereals and Carton Container Division, Battle Creek, Mich., and a vice-president of the General Foods Corp., on May 22 announced his resignation from the firm, effective June 30. He will immediately assume a new post as executive vice-president of the Dr. Pepper Co. of Dallas, Tex., soft drink manufacturer. He has been associated with General Foods for 12 years and came to Battle Creek, Mich. in 1950, as general manager of Post Cereals and Carton & Container.

George M. Laimbeer, managing director of Alfred Bird & Sons, Birmingham, Eng., a subsidiary of General Foods, will succeed Mr. Parker.

J. F. Gray Retires As River Raisin Chairman

Charles L. Wood, president of the River Raisin Paper Co., reports that the company's board of directors has approved the retirement of J. Frank Gray from the office of chairman of the board, to become effective June 1, 1956. He will continue, however, as a member of the board of directors, to which he was re-elected at the stockholders' meeting last March.

H. R. Wright Leaves Alaska Pine & Cellulose

H. R. Wright, former chief engineer for Alaska Pine & Cellulose Ltd., Vancouver, B. C., has resigned to join A. L. Swanson in forming Swanson Wright & Co. Engineers Ltd. The new firm will offer specialized engineering services in the fields of forest products industries and thermal power, as well as general industrial engineering practice.

Evert Container Names New Officers

Three new officers have been elected by directors of the Evert Container Corp., Milwaukee, Wis.

G. R. Van Brunt was named secretary and vice president in charge of plant production; W. R. Kyle, vice president in charge of sales, and Silas H. Towler, divisional vice president. Messrs. Van Brunt and Kyle were formerly in sales with the firm and Mr. Towler joined the company April 1. The three are also new directors.

Charles W. Everet was reelected president and general manager of the company. Other officers are Hazel D. Evert, first vice president; Eugene H. Krohn, treasurer and controller, and Jacobus Kruyne, assistant secretary.

NEWS OF CONVERTERS

OF PAPER AND PAPERBOARD

Gordon Box to Build New Baltimore Plant

Construction is scheduled to start this summer in Baltimore, Md., on a new plant to house L. Gordon & Son, Inc., manufacturer of setup paper boxes and folding cartons, on a 14-acre tract recently acquired near Friendship International Airport.

The factory building will provide approximately 100,000 square feet of manufacturing floor space. The existing main plant has about 66,000 square feet of floor space. Other space is leased. Completion of the new plant will make possible concentration of the firm's production under a single roof.

Montmorency Pkgg. Sold

Rolph-Clark-Stone Ltd., Toronto, Ont. has bought Montmorency Packaging Ltd., Toronto, producers and designers of paper, film and foil packaging.

William T. Pinkerton continues as president and general manager of the subsidiary. Gordon G. Rolph, vice-president, has been appointed a director. Other directors are H. Brooke Bell, Norman Nash and Clair Stewart.

In October last year Rolph-Clark-Stone Ltd. took over Miller Lithograph Co. Ltd., Toronto.

I.P. Opens Waco Milk Container Plant

The International Paper Co. opened a new paper milk container plant in Waco, Texas on June 6.

C. S. Edgar, general manager of the company's Single Service Division which operates the unit, and Maury Quinlan, resident manager, were hosts to the visitors. A tour of the plant will be followed by a reception at the Roosevelt Hotel.

The delegation of International Paper Company officials in Waco for the occasion is headed by J. E. McCaffrey, Vice President and Assistant General Manager of International Paper's Southern Kraft Division, Mobile.

When in full operation, the new plant will produce Pure-Pak paper milk containers at the rate of 50,000,000 containers a month for dairies throughout Eastern Texas and the surrounding states.

Made New Clampitt V-P

James E. Richardson has been made vice-president of Clampitt Paper Co. and manager of the Forth Worth office.

Bemis Starts-Up N. J. Bag Plant

The new plant of Bemis Brothers Bag Co., in the former Transomatic Co. structure on Route 12, Flemington, N. J. produced its first carload of bags this week.

Peak output of the new plant, which manufacturers burlap and laminated paper-lined bags, will be reached by July 1. The plant manager is Richard Hartig.

The Flemington plant replaces the company's factory in Brooklyn, N. Y. closed by changing economic conditions and for decentralization. The new plant will concentrate on burlap bags which have hot asphalt-sealed paper linings. Special asphalt heating equipment is being installed, with heat-transfer oil jackets designed to maintain 450-degree temperatures. A large fire-brick furnace has just been completed inside the plant.

Stone Container Promotes D. M. Cunningham

Stone Container Corp., Chicago, has named David M. Cunningham to the newly created position of director of training and personnel consultant for all of the company's corrugated box plants, carton-making subsidiaries and paperboard mills.

Succeeding Mr. Cunningham as personnel manager of the Chicago corrugated box division, 4200 W. 42nd Pl., is Elmer T. Wozniak, former assistant personnel manager.

L. A. Paper Box Buys Nat'l Automotive Fibres Plant

The Los Angeles Paper Box & Board Mills has purchased the 300,000-sq-ft. National Automotive Fibres plant in Los Angeles for about $1 million, William H. Kewell, president of the paper box firm, announced.

McKay Made District Salesmanager for Scott

Milton E. McKay Jr., has been promoted to district sales manager for the Scott Paper Co. in the Minneapolis-St. Paul, Minn., area.

Mr. McKay was graduated from Western Michigan College in 1948. He joined Scott in 1952 and worked out of Joliet, Ill. In 1954 he was transferred to Madison, Wis., as a district sales manager. His present territory includes Minnesota and North Dakota.

Citation Box Adds Another Plant in Chicago

Citation Box and Paper Co., Inc., 167 North Racine Ave., Chicago, Ill., has purchased the three story building at 2917 South La Salle St. which contains 20,000 square feet of floor area. Citation will continue to operate its Racine Ave., plant and will make corrugated boxes and coarse paper products at the La Salle St. location.

Decorative Ballots

Wonder what countries do with their unused ballots? Well, here's what East Java does. It had 200 tons of ballots left over from the last parliamentary elections. It sold them to villagers to use as wallpaper for their bamboo huts.

Permacel Tape Buys Glue Company

LePage's Inc., of Gloucester, Mass., manufacturer of glues, pastes, mucilages and adhesives, has been acquired by the Permacel Tape Corp., New Brunswick, N. J.

Permacel, a wholly-owned subsidiary of Johnson & Johnson, is a chemical specialties formulator. Its primary products are pressure-sensitive tapes, cellophane tapes and mending and masking tape.

In addition to its plant in Gloucester, LePage's has plants at Decatur, Ill.; Baltimore and Toronto. LePage's will be operated as a separate company with its own management.

R. J. Fitzpatrick Joins Orchard's Sales Staff

Richard J. Fitzpatrick has recently joined the sales force of Orchard Paper Co. as a west coast representative. He will join Edgar Orchard, who is already covering southern California for the St. Louis firm. Mr. Fitzpatrick will help expand Orchard's west coast coverage throughout northern California, Oregon and Washington.

L. B. Schlosser Heads Fine Paper Sales Firm

Leonard B. Schlosser has been elected president of the Schlosser Paper Corp. by its board of directors, succeeding his late father, Fred Schlosser. Founded in 1914, the corporation is a fine paper merchandising firm, with offices and warehouse at 350 Hudson Street in New York.

The new president has been with the firm for nine years in various capacities, most recently as vice-president. He has had working experience with several large paper manufacturers, and, as a member of the faculty of New York University, he has for four years been teaching a survey of pulp and paper course.

NEW LITERATURE

DODGE POWER TRANSMISSION MACHINERY. (Catalogue D-56) Covers complete line of products with detailed index of all material. Also includes sectional drawings, dimensions, weights, application details and engineering tables **Dodge Mfg. Co.**, 4600 Mishawaka, Ind.

ENGINEERING AND DESIGN MODELS FOR PROCESS AND POWER PLANTS. (8p Booklet) Discusses plotting, wire and washer, and detailed scale models. Also includes illustrations of each. **Atkins & Merrill, Inc.**, Post Rd., South Sudbury, Mass.

LOWER MANUFACTURING COSTS. (Booklet) Examines testing as a production tool, where it can help increase the output of satisfactory parts and increase profits. Actual case histories illustrate the ideas in concrete form. **Magnaflux Corp.**, 7300 W. Lawrence Ave., Chicago 31, Ill.

TEL-O-SET TRANSMITTER. (Specification Sheet S-1003-1) Measures either temperature, gage pressure or absolute pressure. Explains the principle of operation and lists complete specifications. **Minneapolis-Honeywell Regulator Co.**, Wayne & Windrim Ave., Philadelphia 44, Pa.

TRI-CLAD 55 EXPLOSION PROOF MOTORS. (Bulletin GEA-6341) Discusses design features and maintenance of new induction motors, one through 30 h.p. for use in hazardous locations. **General Electric Co.**, One River Rd., Schenectady 5, N. Y.

WATER FILTERS PRESSURE TYPE. (Bulletin WC-107A) Describes the uses, design features and engineering details of pressure sand and gravel filters. Also includes table giving capacities, sizes and space requirements. **Graver Water Conditioning Co.**, 216 W. 14th St., New York 11, N. Y.

WATER-VAPOR REFRIGERATION WITH STEAM-JET COOLERS. (Bulletin 9143-B) Provides colored diagrammatic illustrations showing how they operate and installation photographs covering a wide range of applications. **Ingersoll-Rand**, 11 Broadway, New York 4, N. Y.

RAYMOND—A TOTALLY NEW CONCEPT IN WALKIES. (Bulletin 910) Contains illustrated sales copy and specifications. **Raymond Corp.**, 191-140 Madison Ave., Greene, N. Y.

SAVE WITH MEAD POKE-PAK AND GLIDE-PAK. (8p Brochure) Promotes advantages and economies of these two products in handling nearly any material that can be palletized. **Mead Board Sales, Inc.**, 118 W. 1st St., Dayton 2, Ohio.

PRECISION RELAYS. (Bulletin MRM 240) Includes technical data and design and operating specifications. **Manning, Maxwell & Moore Inc.**, 250 E. Main St., Stratford, Conn.

"DO-IT-YOURSELF" SHELVING. (Folder 708) Presents new type of shelving easy to assemble and rearrange to fit any particular needs. Also shows a number of standard arrangements. **Frick-Gallagher Mfg. Co.**, Michigan Ave. at 1st St., Wellston, Ohio.

A NEW WAY TO REDUCE THE COST OF WORKMEN'S COMPENSATION INSURANCE. (Booklet) Outlines four basic components of their medical and health program which they have developed in the last several years. **Liberty Mutual Insurance Co.**, 175 Berkeley St., Boston 17, Mass.

BROOKS ARMORED ROTAMETERS. (Bulletin 130) Contains photographs and cutaway drawings of complete line. Also includes details of design and construction, capacity charts and principles of operation. **Brooks Rotameter Co.**, P. O. Box 432-L, Lansdale, Pa.

CARPENTER PVC PIPE AND FITTINGS. (Bulletin) Gives general description of normal impact and high impact grades, together with specific advantages. Also lists applications by industry and process and includes installation instructions. **Alloy Tube Div., Carpenter Steel Co.**, Union, N. J.

CONAX THERMOCOUPLE ASSEMBLIES AND PRESSURE SEALING GLANDS. (Catalogue 1556) Introduces new check wells, speedwells, multiple wire thermocouple glands, pressure sealing spring loaded thermocouples and flex-tube assemblies. **Conax Corp.**, 7811 Sheridan Dr., Buffalo 21, N. Y.

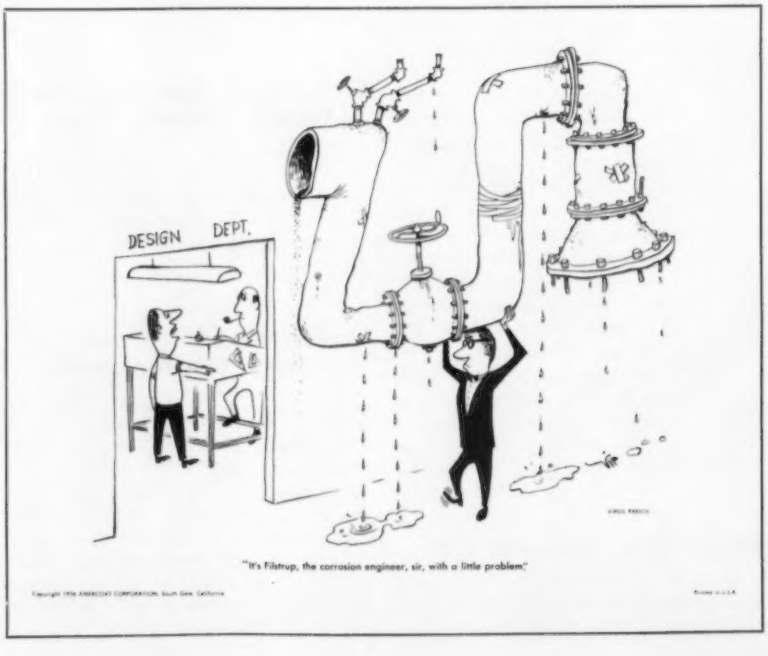
COCHRANE HYDROMATIC VALVE. (Bulletin 5813) Describes features, operation and advantages of this valve, designed to eliminate the complicated nest of individual valves required for control of backwash, etc. **Cochrane Corp.**, 3144 N. 17th St., Philadelphia 32, Pa.

CLARIFICATION, SEDIMENTATION AND THICKENING EQUIPMENT—A PATENT REVIEW. (Bulletin 54) Discusses and illustrates, in the order of their date of issuance, those patents found to be pertinent to the treatment of suspensions as previously described. Also presents bibliography of patents examined during this survey. Price $2.00. **Engineering Experiment Station, Louisiana State University**, Baton Rouge 3, La.

CAT ELECTRIC SETS FOR POWER AND PROTECTION. (Booklet 31922) Shows many of the different uses for these plants and why they are well suited to the applications. Also contains pictures of actual installations and cutaway drawings. **Caterpillar Tractor Co.**, 600 W. Washington St., Peoria 8, Ill.

DEVILBISS HOT SPRAY METHOD, PAINT HEATERS AND LARGE-CAPACITY PAINT PUMPS. (Forms F-286, 1E-114-B, F-3100) Discusses reasons behind the advantages of the hot spray method. The latter contain illustrated sales copy and specifications. **DeVilbiss Co.**, 300 Phillips Ave., Toledo 1, Ohio.

NAF SCHAUFFELBERGER CIRCULATION OUTFITS AND NAF BALL VALVES. (Pamphlets 261 and 262 Respectively) Includes layout of sulphite circulation plant, illustrated sales copy and photo of mill installation. The latter provides engineering drawings of different applications and illustrated sales copy. **Papermaking Equipment Co., Englewood, N. J. representatives of A.-B. Nordiska Armaturfabrikerna, Linkoping.**



"It's Filstrup, the corrosion engineer, sir, with a little problem"

1856 ★★★★★

ESTABLISHED 1856

Draper Brothers Company

CANTON · MASSACHUSETTS

To: Our Customers

This year marks the 100th Anniversary of the founding of our Company here in Canton. It is time to pause and do honor to the past – a time to plan for the future.

One hundred years spans many hours of trouble, worry and despair, with other hours of fun and friendship and the joy of doing worthwhile things. To the generations of people who have worked here through these years to bring us to this happy birthday, we are deeply grateful.

And, yet, it is to folks like you to whom we owe the most. Without your faith in us and our products, without your sympathetic understanding of our strengths and our weaknesses, without your trust in our ability to serve, there could have been no anniversary to celebrate.

And, so with a confidence grown strong through your support, we look forward eagerly to our second century. Surrounded by research and engineering institutions and with a source of materials and equipment close at hand, we stand ready to serve you in the years ahead.

DRAPER BROTHERS COMPANY

John H. Draper, Jr.

President

1856 Our 100th Anniversary 1956

★★★★★ 1956

How and Why of Rubber Covered Rolls

1.—THE MODERN FOURDRINIER

Rubber roll covering is varied as to thickness and rubber density according to location on machine, grade being made and particular ideas of each mill.

R. M. Leighton

Technical Service Manager
Stowe-Woodward, Inc.

The invention of the fourdrinier in 1798 and the cylinder machine in 1809 made necessary the use of rolls on the wet end of a paper machine. The first machines were without dryers and the sheet was run off the wet end in r lls and loft dried. The rolls used were: wire covered, metal, wood, leather and cloth covered.

In 1839 a practical process of vulcanization was discovered almost simultaneously by Charles Goodyear in the United States and Thomas Hancock in England. This made practicable the use of rubber covered rolls in the paper industry.

First Rubber Covered Rolls

The first patent on the manufacture of hard rubber, commonly called "Ebonite", was granted to Thomas Hancock in England, in 1843. This was the beginning of modern rubber technology. Charles Goodyear, in his book "Gum Elastic" (1853-1855), in chapter 5 makes the first reference to rubber covered rolls which were for printing, to take the place of the molasses and glue roll. It is interesting to note, in this same chapter, that Goodyear mentions the use of deckle straps 1¼" x 1¼" x 20' long and describes the use of such straps.

The rubber calender came into common usage about 1870 and gave to the roll coverers a practical means of producing thin smooth sheets in any length that could easily be handled in processing a rubber covered roll. It was now possible to make roll covers from hard to soft in any diameter or length.

The Boston Belting Company, successors to the Roxbury Rubber Company, which was established in 1828, began the manufacturing of rubber covered rolls at about this time and was, for many years, a leader in this field. The Boston Belting Company claimed credit for making the first rubber covered press roll, which was used by a paper mill in Connecticut.

The literature contains very few references on the use and manufacture of rubber covered rolls during this period.

The Boston Belting Company has been out of business for many years so it is not possible to obtain direct information on troubles in the paper mills caused by rolls or what was considered a good roll.

The Author

Problem of R. C. Hardness Solved

Some of the old paper makers recall that generally there were three choices —hard, medium and soft. The common means of testing was to indent with a blunt metallic object, such as a key, and judge from the recovery of the indentation. It was not until the Pusey & Jones Plastometer was brought out in 1911 that an accurate measurement was made. This instrument is the present standard for the industry.

This brief resume shows that it was 60 to 70 years after the paper machines were invented before rubber covered rolls came into usage.

It was not until the period from 1885 to 1890 when modern paper machines were perfected by the addition of the cone drive and steam heated dryers that rubber covered rolls began to be of importance on a paper machine. The reasons being, that the machine became much faster, more flexible anad more grades of paper could be manufactured, all of which demanded different treatment.

Purpose of R. C. Rolls

Rubber covered rolls are used on a paper machine generally for the following purposes: extraction, cushion to prevent crushing or marking, such as a

press roll; to protect from corrosion and abrasion, such as felt and table rolls; to finish, such as smoothing press, breaker stack and size press.

On a paper machine there are three methods used in removing water; (a) drainage (table roll), (b) extraction (Press rolls), and (c) heat (Dryer rolls). The rubber covered rolls for the removal of water are confined to the wet end of the machine.

The hardness and thickness of rubber covers are determined by the grade of paper being run. Exceptions can be found where the same grades being run in different mills use different hardness and thickness of covers.

The rubber roll coverer knows from long experience that there are no exact rules by which to specify roll covers according to the grades of paper. Each mill is an individual case and rolls are covered to meet the specific requirements.

The type of cover used is, in general, governed by the bulk, hardness, freeness, finish, etc. required for a particular grade of paper.

To illustrate this, the Table shows the roll set-up on a modern high speed kraft specialty machine designed for 2,000 f.p.m. using a pick-up felt and clover leaf press section. The rolls are in sequence from the breast roll.

Typical Roll Set-up on a High Speed Kraft Specialty Machine

Table Rolls	1/4" hard rubber (If grooved 3/8"-1/2")
Wire Return	1/4" hard rubber
Lumpbreaker	2" 225 1/8" P. & J.
Felt Rolls	1/4" hard rubber—plain (1/2" if wormed)
Felt Squeeze	1" 45 1/8" P. & J.
Top Transfer	1" 45 1/8" P. & J.
Bottom Transfer Suction	1 1/8" 32 1/8" P. & J.
Center Clover Leaf	1" 40-50 1/8" P. & J. Neoprene
Suction Rolls	1 1/8" 32 1/8" P. & J.
Top Smoothing	1" 35-40 1/8" P. & J.
Bottom Smoothing	1/2" Microrok
Striping Roll	1" 15-20 1/8" P. & J.
Top Size	1" 20-25 1/8" P. & J.
Bottom Size	1/2" Microrok
Top Breaker Stack	1" 15-25 1/8" P. & J.
Bottom Breaker Stack	1/2" Microrok

• TABLE ROLLS are covered with a thin cover of hard rubber to prevent corrosion; resist abrasion; to present a surface that has little abrasive effect on the wire, and to prevent electrolysis that sometimes develops. In addition, the cover does not materially increase the weight of the roll. The wire return and felt rolls are covered for similar reasons.

• LUMPBREAKERS or PRESSER rolls are used to firm up, increase vacuum, reduce streaks, and prepare the sheet so that more work can be done in the presses.

• FELT SQUEEZE ROLLS are run with a bare suction roll and the purpose is to wring out and clean the felt without harshness.

• TRANSFER PRESSES are used to prevent wet end breaks at high speed, remove some water and generally further firm up the sheet for succeeding presses. The top roll is made interchangeable with the rubber covered wringer roll and the bottom suction is made interchangeable with the main press suction rolls.

• SUCTION ROLLS are of standard thickness and hardness and are interchangeable.

• CENTER CLOVER LEAF ROLL is of large diameter and is covered with Neoprene to help eliminate pick-up on light sheets. The flexing of a medium soft cover also helps to eliminate picking on a sheet.

Measurement of R. C. Roll Hardness

The standard instrument of measuring the hardness or density of rubber covered rolls is the Pusey & Jones Plastometer with 1/8" ball. The use of this instrument is covered by ASTM 2531-41 and TAPPI standards.

Pusey & Jones indentation value is the indentation expressed in hundredth of a millimeter of a 1/8" ball actuated under a load of one kilogram. This is a dead weight type of instrument, rugged in construction, accurate, and simple to operate by shop personnel. The instrument is commonly referred to as P&J.

The Shore Durometer and the Adams Densimeter are occasionally used in the paper industry. These instruments are of the spring type and are not as accurate as the Plastometer, and due to the different dial scales do not give direct readings and must be correlated with the Plastometer for each type of rubber compound used. In the event of a dispute over hardness, the Pusey & Jones Plastometer is always used as the standard instrument.

• SMOOTHING PRESSES are used for finish and leveling the sheet. They are not used for water removal.

• BREAKER STACKS add further finish, some redistribution of water and some density is added to the sheet. No water is removed.

• MARKING OR STRIPING ROLLS can be used to replace the top roll in the breaker stack, converting it to a striping press.

• SIZE PRESSES are used on some grades to add printability by sizing and surface treatments for various purposes. Some of high speed machines have no size press and the paper is further treated by conversion as required.

Today rubber covered rolls are a highly developed specialty. Each roll is custom-made for each mill or special application.

The roll manufacturers of today have a number of elastomers to use for definite types of roll covers such as crude (natural rubber), man-made rubbers—GR-S—(Butadiene-Styrenes), Neoprene of several types (Chloroprene Polymers), and Buna-N (Butadiene-Acrylonitrile Polymers).

There are other man-made elastomers which are now in the development stage that will also be used as specific requirement make them necessary, such as the Silicones, a number of plastics and Chlorosulfonated Polyethylene, to name a few.

This is the first of three articles by Mr. Leighton, the second will deal with cylinder machines and the third with the modern tissue and other high speed machines.

What is the Role of the Consultant in Paper Mill Maintenance?

When to use a maintenance consultant and what he can do for you.

H. Warren Roos
Vice President, Wallace Clark & Co., Inc.,
Management Consultants, New York, N. Y.

Many paper executives are not aware that maintenance is an area where outside consultants can help. Speaking broadly, the role of the consultant in maintenance lies in planning and installing a maintenance program that will help minimize production costs. Authorities on plant maintenance agree that the biggest single factor in better plant maintenance is having a well-planned, well-organized program, and having the personnel trained to derive full benefit from it. This is the area where it frequently pays to consider using a consultant.

Why Use a Maintenance Consultant?

The reasons for using a management consultant on maintenance boil down to three:

1—The consultant, provided you select a good one, has had experience designing and installing maintenance programs in many different plants and industries. He has seen what works and what does not work; his equipment includes all the successful practices installed or found in scores of industries; in our own case, this includes over a dozen paper mills. The value of this comparative experience can be enormous.

2—The consultant, since he is hired for the specific task of improving the mill's maintenance program, is not distracted by other considerations, but is free to devote his full time to the job. This means a substantial time saving in effecting whatever improvement is possible. This speed factor may be important, and be sufficient in many cases to amortize the cost of the consultant's fees during the first year the program is in effect.

3—The consultant, simply by reason of the fact that he is a competent outsider, can usually get his ideas accepted and put into action more quickly than the company's own man.

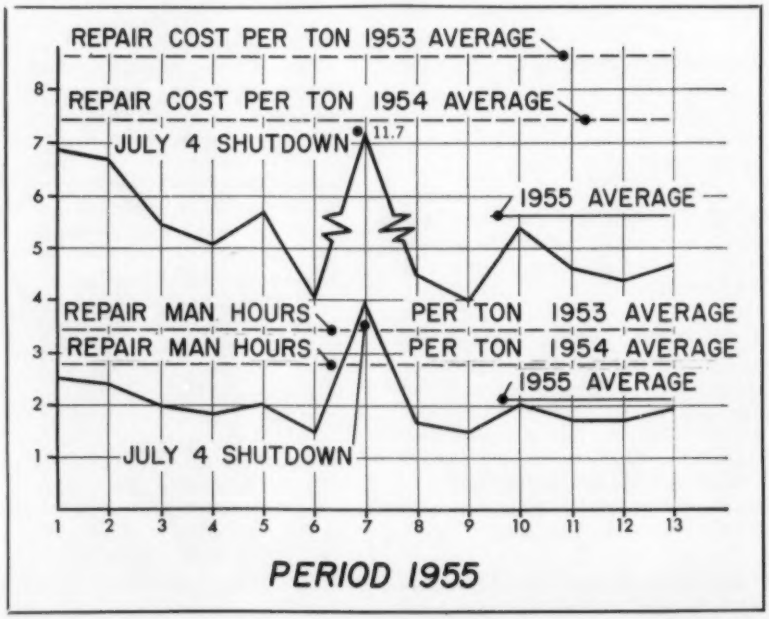
How a Maintenance Consultant Works

The qualified, ethical maintenance consultant will make no promises until he first studies your present set-up and evaluates it. This may take him a day or more, depending upon the size and complexity of the mill. In our own case, we make no charge (other than for travel to the plant) for these preliminary studies.

Upon completion of the plant visit, the consultant makes a written analysis of his findings, presents a program for improvement, estimates how long it will take to install the program and how much it will cost. Generally, he quotes a firm, overall price, and obligates himself to complete the undertaking within the price and time limits agreed.

The consultant will request that one or more understudies be assigned to work with him throughout the job, the number depending upon the size of the mill and the complexity of the undertaking.

Ordinarily, the consultant works steadily on the job during the initial



RELATION of maintenance man hours and total maintenance costs to production.

phases, with the understudy assisting on detail and participating in the planning. During the later stages the consultant delegates a steadily increasing role to the understudy until the latter, or someone management designates in his stead, is carrying the full responsibility. This policy of having the consultant work on an intermittent time basis while the mill personnel stays on the job from beginning to end, has several advantages:

1—It reduces the cost of the job to the mill. You do not pay for the consultant when he is not there and not needed.

2—The work goes on all the more effectively on an intermittent consultant time basis. The recurring arrivals and departures of the consultant exert a strong psychological effect upon the man the mill has selected as an understudy. He begins, especially during the consultant's absences, to feel that the program is partly his own; he assumes responsibility and gets things done. He soon begins to look upon the program as "ours" rather than "the consultant's".

3—Having an understudy on the payroll who has participated in the development of the new maintenance program from its inception is a great asset to the mill, especially after the consultant has finished his work and departed. The understudy knows the reasoning behind each step that was taken; he can be a tower of strength in "keeping weeds from growing in the garden" after the consultant's work is finished. The consultant, of course, makes regular reports to the mill management while the job is in progress.

Consultant vs. "Doing It Yourself"

Company X is nationally renowned for the excellence of its management. Its executives had been endeavoring for almost three years to install a new program of maintenance in its main plant, but at the time it was decided to call in a consultant, it was still less than 50 per cent complete. The consultant agreed to finish the job within 9 calendar months.

During the early stages of the job, the consultant recommended a substantial increase in the mill maintenance force. This was done, and the installation was finished on schedule.

Shortly after the completion of the consultant's work, an analysis was made of the benefits of the newly-installed program. This analysis showed that, despite absorbing the increased cost of maintenance personnel recommended by the consultant, the mill was getting substantially better machine-utilization and, through this, was achieving lower unit production costs. This saving was more than enough to defray the increased maintenance costs, the consultant's fees, and still leave a tidy profit. This was all achieved within substantially less than a year.

Company X stands to collect better than 100 per cent return each year on its investment in the maintenance consultant's services.

Savings from Planned Maintenance

The accompanying chart is from the series of executive reports set up to determine actual results in a fine paper mill. This chart relates Maintenance Man Hours and Total Maintenance Cost to production. Progressive improvement is indicated by the fact that both Maintenance Man Hours, and Maintenance Cost per ton for 1955 are below the 1954 average, as was 1954 below 1953. We recognize that, with productive capacities increasing throughout the industry as the result of expansion and modernization, maintenance cost per ton can go down without any improvement in maintenance.

However, this usually is only a *short term* result which will not continue unless maintenance is improved. Likewise, by reducing downtime for mechanical reasons, improved maintenance makes a direct contribution in increasing total production. Maintenance expenses must, in the last analysis, be paid for by production. If a smaller proportion of the income from each ton of production need be spent for maintenance, the overall margin of profit is increased.

Should You Use a Maintenance Consultant?

No categorical answer can be given to this. The mill executive should first ask himself (and then give himself honest answers to) such questions as the following:

1—How good (or bad) is our maintenance program NOW?

2—How good should it be?

3—How much better off would we be (in money each year) if we reached this objective?

4—Given our present resources (skills, manpower, free time of the qualified executives for planning and supervisions, etc.), how long will it take us, unassisted, to reach this objective?

5—Will the resulting program be as good as the one an experienced consultant can give us?

Simple arithmetic, based on honest answers to such questions, will help the paper mill executive arrive at a sound decision.

Wow! . . . Your bag making machine sure turns out some dillies, eh.

New Improvements in Chlorine Dioxide Generation

An improved chlorine dioxide generation process has been developed by Olin Mathieson Chemical Corp. The new process is a modification of the well-known prior Mathieson process currently in extensive use. In this process, chlorine dioxide is produced from sodium chlorate by reduction with sulphur dioxide in the presence of sulphuric acid. The previous Mathieson process was described in detail in *Paper Trade JOURNAL* for August 21, 1953, by Vernon Woodside and K. S. MacLeod. The improved Olin Mathieson process differs principally in the addition of a chloride into the generator. This results in an increase in the yield of chlorine dioxide based on the chlorate charged from about 90 per cent to 97 per cent of the calculated yield. In addition, the injection of chloride effects a reduction in the chlorine content of the generator gas from the current 2 to 5 per cent to less than 1.5 per cent based on the combined chlorine and chlorine dioxide in the gas.

The overall chemical reaction forming the basis of these processes is as follows:

$$2\ NaClO_3 + SO_2 + H_2SO_4 \rightarrow 2\ ClO_2 + 2\ NaHSO_4$$

Other previous processes employing chlorate reduction have operated at relatively high chlorate concentrations. In these as well as in the prior Mathieson continuous process, the following competing side reactions occur to a small extent:

$$2\ NaClO_3 + 5\ SO_2 + 4\ H_2O \rightarrow Cl_2 + NaHSO_4 + 3\ H_2SO_4$$

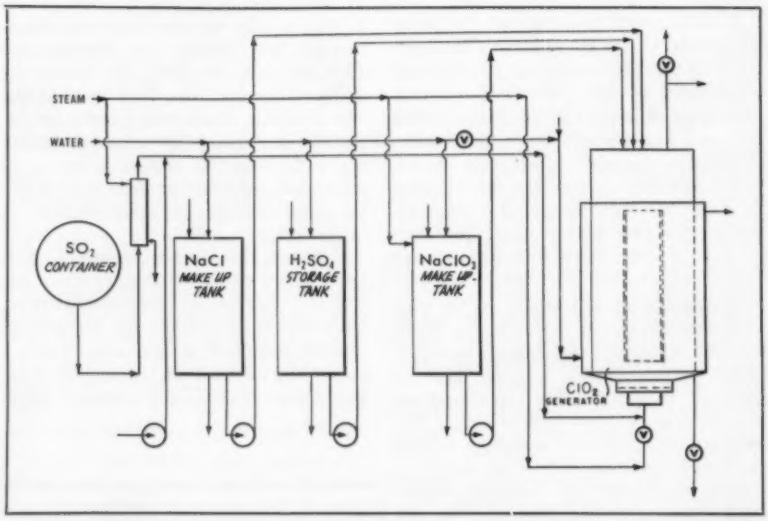
$$NaClO_3 + 3\ SO_2 + 3\ H_2O \rightarrow NaCl + 3\ H_2SO_4$$

Eliminates Side Reactions

In the new process, chloride injection appears to eliminate the side reactions almost completely and results in nearly theoretical conversions of chlorate to chlorine dioxide.

In the Olin Mathieson processes, spent liquor from the reactor is continuously discharged. For this reason the chlorate concentration is maintained as low as possible. This is essential for chlorate economy and also contributes to the reduction of the concentration of chlorine in the generator gas. A concentration of chlorate in the generator liquor of about 0.2 mole per liter, as previously used, leads to a loss of 4 per cent of the chlorate charged. In the new process, operating under the best conditions, less than one per cent of the chlorate charged appears in the purged liquor.

Chloride is introduced, usually as a solution of sodium chloride, with the chlorate to the generator in proportions of about 5 to 15 mole per cent based on the chlorate charged. Details of the complete operation are shown in the figure.



Improvements in chlorine dioxide process shown above, are reported to give substantial savings.

Process Details

The flow diagram of Olin Mathieson's improved chlorine dioxide generating process depicts the following operations: Sodium chlorate, stored as a concentrated solution, is diluted with water and metered to the reactor. Sulphuric acid is pumped to the reactor to maintain the concentration of the reaction liquor at about 4 to 4.5 molar. In addition, sodium chloride solution is pumped to the generator in quantities sufficient to maintain the chloride concentration of the reaction liquor in the range of 0.05 to 0.25 molar. Sulphur dioxide, obtained either as a liquid or from a sulphur burner, is diluted with air to approximately 10 per cent SO_2 concentration and passed into the bottom of the generator. The chlorine dioxide is continuously diluted and removed with the air introduced as the diluent in the sulphur dioxide stream. The chlorine dioxide may be absorbed in water at 40 deg. F. to produce a chlorine dioxide solution containing up to about 8 grams per liter.

Savings Reported

The savings which can be effected by the use of the improved Olin Mathieson process are said to be material. For example, when 10 moles of sodium chloride are charged per 100 moles of sodium chlorate, the yield of chlorine dioxide based on the chlorate is increased from 90 per cent to about 97 per cent. Total chemical costs amount to 0.162 dollars per pound of chlorine dioxide compared with 0.173 dollars per pound. The saving of 0.011 dollars per pound of chlorine dioxide amounts to about 7 per cent of the chemical costs. In operating a large scale plant at ten tons per day, this saving amounts to about $70,000 per year.

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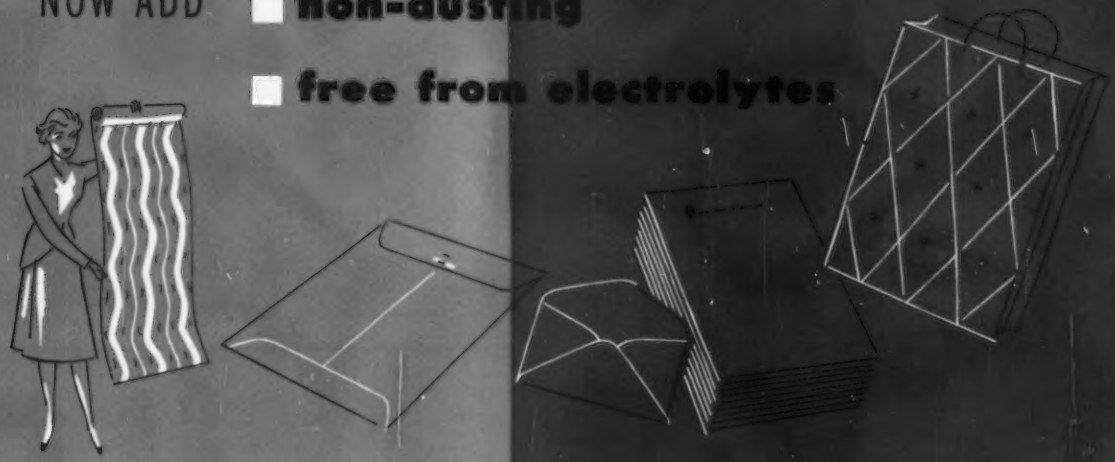

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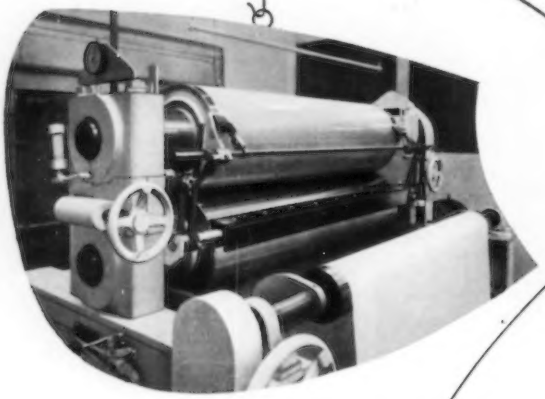

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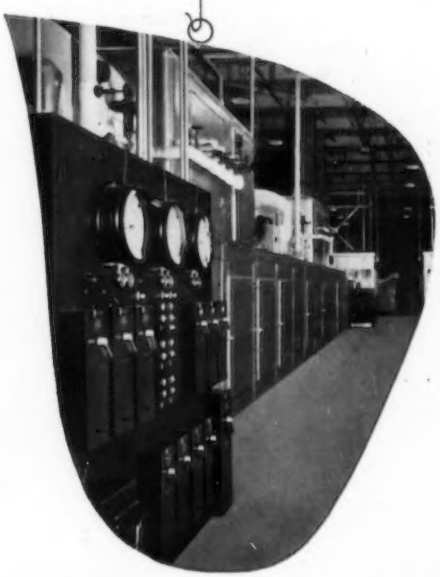

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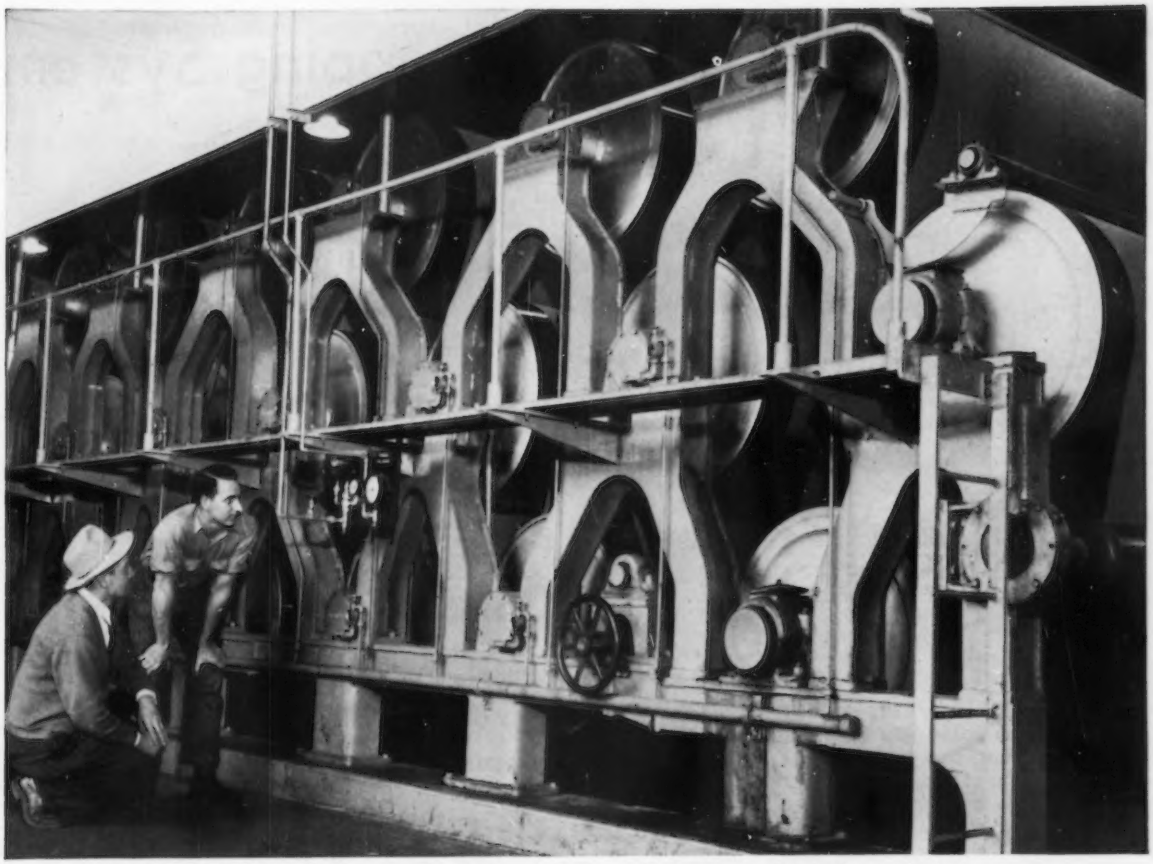

By adding 16 double shell driers to a 78 roll roofing felt machine, Johns-Manville's Waukegan, Illinois, plant has been able to operate that machine at higher pressures than before—with maximum safety and economy.

Pressure up...temperature up...and

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New Automatic Roll Wrapping System Introduced at Powell River . . .

. . . Advances two automation steps further than any other mill.

Colin Campbell

Engineering Dept., Powell River Co.,
Powell River, B. C., Canada

The most modern automatic roll handling installation in the pulp and paper industry has just been completed at Powell River Co. at a cost of $200,000.

Embodying the main features of similar systems recently installed in the United States, the Powell River Company advanced two automation steps further than any other mill by installing the following equipment on its three winders in the No. 7 and 8 machine room:

1—Automatic shaft handling
2—Near automatic core feeding

Success of Powell River's installation, which has resulted in better quality finishing owing to the modern methods introduced at the same time, was all the more noteworthy in view of the following factors:

a) the installation had to be made without interrupting newsprint production.

b) The difficult machine room-finishing room layout. Not only was there a shortage of space at the dry end of the two paper machines, but because the existing finishing room is located two floors below the machine room, rolls must be transferred by a Lowerator in their unfinished state. (When Powell River's new ninth paper machine goes into production this coming winter, its Lowerator will follow the finishing process, as in other plants.)

The equipment was supplied by the Lamb-Grays Harbor Co., Inc., Hoquiam, Wash. Installation was carried out by sub-contractors of Northern Construction Co., J. W. Stewart Ltd., C. H. E. Williams Co. Ltd. (electrical) and Flanders Installations Ltd. (mechanical).

Roll Stripping and Sorting

Actually three separate systems were installed in Powell River's No. 7 and 8 machine room, one for each of the three winders. Each system performs the following functions:

a) Strips rolls off the winder core shaft

b) Returns the core shaft ready for use

c) Stores the rolls while they are dressed and marked, and

d) Permits the rolls to be passed on in any sequence.

A comparison of the old methods and the new system will illustrate the advantages of the system.

The Author

Old Method

Formerly about once every 20 minutes the crew had to handle a set of rolls by air hoist from the winder to wrapping drums, manually extract a 400-pound shaft 22 feet long, juggle the shaft back to the winder on a small dolly, and laboriously reload it with cores before putting it back on the machine. (Such manual handling of the weighty shafts had in the past accounted for a high incidence of sprained backs among employees). After wrapping, the rolls had to be manhandled onto dollies, wheeled across the floor, and pushed off the dollies onto the Lowerator.

Automatic System

Now, when the set of rolls is ready for discharge from a winder, one of the crew pushes a button and a bridge lowers, drawbridge fashion, to form a deck between the winder and the stripping conveyor. Flipping a lever starts an air-driven kicker which ejects the rolls across the deck.

When the rolls stop on the conveyor the bridge automatically rises. An anchor arrangement moves up and engages a collar on the core shaft.

The operator pushes a button and the conveyor starts moving the rolls endwise off the shaft which remains stationary. Just before the rolls leave the shaft, the conveyor stops briefly while a pair of hooks on an overhead crane move down and take up the weight of the

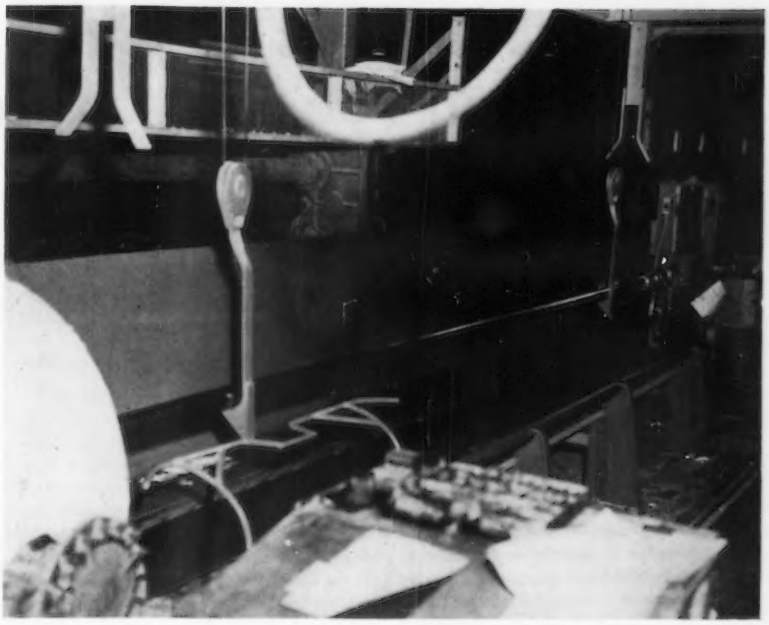
shaft. The conveyor then moves the rolls clear of the shaft.

When the rolls are in proper position, the conveyor stops and a kicker pushes the rolls as a group onto the sorting deck. Here they come to rest against a row of stops.

The core shaft from which the rolls were removed is carried by its crane up, over and down into a storage pocket on the winder apron, then the crane returns to "home" position. Cores are started onto the shaft by hand and a foot-controlled mechanical feeder drives them into place. When the shaft is required the operator pushes a button and a pair of arms rise up rolling the shaft into its bearings on the winder.

Meanwhile another member of the crew strips and marks the rolls on the sorting deck. This done, he releases them in any desired order by lowering appropriate pneumatic deckstops controlled from a pushbutton station.

The rolls pass onto a long conveyor which transports them to the Lowerator feed unit. This lowers the rolls about 9 inches to the heights of the Lowerator ramp and feeds them to the Lowerator mechanism. The flow of rolls is automatically controlled to suit the ability of the Lowerator to carry them away.



Weight of core shaft is taken by the lowered crane hooks as the newsprint rolls (left) move away from the winder on the conveyor—a good example of push-button operation.

Roll Finishing

In the finishing room the rolls are completely wrapped, weighed, labelled and upended ready for loading onto railway flatcars. To accomplish this a system of conveyors and ramps and the following special equipment is used: a pair of wrapper drums, an overhead wrapper dispenser, two band dispenser carts, a head gluer, a hydraulic heading machine, a scale with a conveyor mounted on it and a hydraulic upender.

Feed Conveyors

The Lowerator deposits the rolls on a storage ramp at its lower end. A deckstop passes rolls one at a time onto the first conveyor on its way to the finishing line. Enroute each roll passes over five conveyors. Two of them swing to "turn" the roll around corners. At the end of the conveyor system the rolls are "kicked" down a long storage ramp, where each roll awaits its turn to be wrapped.

Finishing Line

Two men, one on each side of the finishing line, control the operations. One man pushes a button to tip a roll through onto the wrapping drums, then starts the drums revolving. By holding down the appropriate button he then feeds from the dispenser above the size of wrapper suited to the roll. Both men guide the wrapper around the roll and then, letting the rotating roll continue to draw its wrapper, they start the purple bands feeding. This they do by stepping on treadles on the sides of the band dispensers, thereby pressing a rubber wheel against the revolving drums and driving the rollers which dispense the bands.

When enough wraps have wound on the roll a pushbutton-operated "flying" wire cuts the sheet. The men insert soft heads at the ends of the roll, cut off the bands by tramping on a pedal on the sides of the dispenser carts, then crimp the wrapper and bands over the end of the roll. At present the tail of the wrapper is stuck down with gummed tape, but shortly a tail-gluing attachment will be added which will eliminate this.

The roll is now ready for the "heads" which are glued on each end. The operator puts the head gluer through its automatic cycle twice, providing two heads on which glue has been sprayed. He passes one to the man of the other side. The heads are then positioned on the platens of the heading machine where they are held by suction.

Now the second man, by pushing buttons, kicks the roll off the wrapper drums and across the band carts onto the heading machine. He moves one platen to suit roll length and then starts the "press" cycle. Under hydraulic pressure the two heated platens squeeze the glued heads onto the ends on the roll. The pressure holds for a timed period, allowing the glue to cure and securely bond the heads to the crimped-over wrapper. At the end of the time interval the platens release the roll, which is ejected onto a storage ramp. Once the "press" cycle is started the crew begins wrapping the next roll and has it ready for the heading machine shortly after the previous one is released.

Weighing the Rolls

The scale operator selects by pushbutton the rolls that are passed from the header discharge storage ramp. The rolls progress along a conveyor, over a ramp and along another conveyor line to the scale. Each roll stops on the scale ready conveyor until the scaleman pushes a button to move it onto the scale. He then applies the bills, records the roll weight, stamps the weight on the bills and easily "knees" the roll off the scale conveyor down a storage ramp.

The Upender

The lift truck driver controls the operation from here. As he backs away with rolls he has just picked up, he yanks one cord of a pair comprising a drop-cord selector. The hydraulic unender leans back to the down position and stays there while a pneumatic deckstop passes one or two rolls, depending on the selection. As soon as the last roll is on, the upender starts up, hesitates for an instant to let the roll(s) settle to the low end and then continues to the upright position. When the lift truck driver returns he finds his selected load waiting for him.

Recent Solutions to Odor and Flavor Problems in Food Boards and Papers

L. C. Cartwight and M. W. Browne

Foster D. Snell, Inc., New York, N. Y.

It is well understood by paperboard and glassine and greaseproof manufacturers producing packaging materials for the food industry that detectable traces of any odor in the paper or paperboard can cause packagers to reject the material. The ever increasing demand by the food industry for papers and boards, alone and in combinations with plastic films and metal foils, has intensified the need for understanding odor and flavor problems, and methods for solving them.

Whatever the cause, the nature, or the difficulty of the odor or flavor problem in food papers and boards, and whether the problem confronts the paper mill, converter, or user, the logical approach to its solution is the same: First the problem must be defined accurately, its seriousness and prevalence determined, sources and mechanisms postulated, and these postulates tested. Next, likely corrective measures must be devised and tried. Finally, when the problem appears to be solved, verification of the adequate correction should be made under actual, or effectively simulated, service conditions.

It is now almost universally recognized that effective solution of any of the infinitely diverse odor and flavor problems rests with a trained sensory panel. Any or all of the usual sensory panel techniques may be used in the study of paper and paperboard odor and flavor qualities. The industry is generally familiar with these techniques.

Guideposts

Although the variety of odor and flavor problems is endless, and each one may appear unrelated to the next, there are certain guiding principles which are repeatedly applicable to their solution. Following are some of the guideposts that have helped us thread our way through the specific problems described later:

1—A seeming lack of significant odor or flavor in a packaging material, itself, is no final guarantee that it will not adversely effect the odor or flavor of certain products packaged in it.

2—It is also true that absence of adverse effect on odor or flavor of one packaged product is not conclusive evidence that another product will not be affected.

3—We must recognize, then, that the odor and flavor quality of any critical paper or board should be tested as nearly as possible under the intended conditions of use.

4—Even though accelerated tests are convenient and often essential, correlation of their results with those under normal service conditions should be carefully established.

5—While materials intended for general food packaging use may be effectively screened for odor and flavor quality by testing with a relatively small number of especially sensitive foods, used as prototypes, they should preferably still be checked for any specific new application.

6—Consideration must be given to all the conditions of intended use, especially in setting levels of tolerance for odor and flavor in packaging materials.

Proof of Innocence

As paper and board men well know, the packaging material is the first to be accused when flavor contamination of the packed material appears. Many times the package is innocent, but the burden of proof is on the defendant.

Recently, for example, one of our clients sent a large shipment of paperboard to a packer of frozen vegetables. The paperboard was used in packing frozen spinach. Shortly after the product reached the market, the packer began to get complaints about an odor of oil which consumers were finding in it. He immediately charged the paperboard supplier with having given him defective material.

We obtained samples of the defective spinach and of the paperboard. Our sensory panel detected a strong odor of kerosene in the spinach, but were unable to find any unusual odor in the paper board. Environmental tests were made, in which we stored market samples of fresh spinach with the paperboard under various conditions, but we were unable to reproduce the oil odor. We inferred, therefore, that the odor had probably originated with the spinach itself. Knowing that kerosene is often used as a base for insecticides, we analyzed the contaminated sample of spinach for several common materials, and we found excessive quantities of DDT. We were thus able to demonstrate that the paperboard supplier was innocent of the charge.

Specific Trouble Spots

It is also true, however, that conditions of manufacture of food papers and boards, as well as their conversion into packages and intermediate periods of storage and transit, may provide opportunities for contamination that will produce a subsequent off-flavor or undesirable odor in the packaged product.

Papers and boards can become unacceptable at practically any manufacturing stage. Contamination can result either from prolonged contact of basic materials with mal-odorous substances, or from the selection of unsuitable raw materials with malodorous substances, which we have assisted in odor and flavor transfer problems, trouble could have been avoided by the application of sensory control techniques.

A supplier of cartons for cigarettes received a large rush order. In order to

fill it promptly, he had to use a stock pile of scrap material. Some months before, he had checked the odor of this material and found it satisfactory. He therefore made the unfortunate assumption that it would suffice in the present application. However, the room in which it had been stored had undergone renovation during the storage period, and creosote had been used in the construction work. It was not long before complaints began to reach him from the cigarette packer, and ultimately the supplier lost a suit for substantial damages.

Our sensory "detectives" were able to trace the source of the trouble without difficulty. But by the time we were called in, the damage had been done. At least, the client is now reasonably assured that such difficulties will not re-occur; he has instituted a comprehensive program for the routine evaluation of all raw materials.

One summer, a processor had been troubled by the development of mold in bags of starch size. The odor of mold in some of his products had caused complaints. The following summer was particularly hot and humid, and in order to avoid the mold problem, the processor added relatively enormous quantities of preservative to his starch stocks. But again there were complaints, this time from the odor of the preservative itself; the cure had been worse than the problem. In this way, the processor learned the value of continuous quality control.

But the problem of contamination can involve more than a simple odor transfer. In one instance, a manufacturer of waxed paperboard had been careful to check both raw materials and finished product for objectionable odors. The material had been satisfactory in packaging several materials, but the supplier had a series of complaints from manufacturers who had used the board for packaging a product based on sweet cream. The analysis of this problem was particularly difficult, but we were finally able to postulate that a complex chemical reaction had taken place between the cream and one of the ingredients of the wax coating. It was further established that the reaction would take place only in a system containing moisture, fat and protein. The problem was solved by a minor re-formulation of the client's wax mixture. It effectively demonstrated the principle that a packaging material can be adequately tested only by reproducing the actual conditions for which it is intended.

In other cases, problems have occurred resulting from the inappropriate permeability characteristics of packaging materials. Odor and flavor problems developed when a manufacturer of prepared mixes changed from cellophane to polyethylene in wrapping a specialty product. Carefully controlled laboratory experiments indicated that the client's product had a rather unpleasant base flavor which had been effectively masked by an added flavoring mixture. The cellophane package had sealed the masking flavor in the product for a reasonably long shelf life. But one of the components of the flavor was rather volatile, and the relatively permeable polyethylene allowed it to escape, thus resulting in a serious flavor problem.

It is our experience, however, that many odor and flavor problems arise from printing.

Printing Problems

The importance of printing on food packages in stimulating impulse buying, and increasing consumer discrimination with respect to product quality, make it essential that the manufacturer give careful consideration to possible adverse effects of the printing on the odor and flavor quality of the product as it reaches the consumer.

Since complete, or even substantial, elimination of odor and flavor potential from printing often restricts the media that may be used and the effects that may be obtained, as well as generally increasing the cost of printing, it is essential that the odor and flavor requirements be accurately determined for the particular application. But, in meeting the problems, we must see that needless expense in greatly exceeding the requirements is avoided. All too often, not only are the specific requirements unknown, but the very existence of the odor-flavor-contamination problem is overlooked until it is announced by a rash of consumer complaints, and its seriousness emphasized by returned goods and loss of sales.

On one occasion, a large run of printed outer wraps for candy bars, which had a lacquer over-print, were found to be contributing significant residual solvent odor and flavor to the candy, even though it had an aluminum foil inner wrap. Proper analysis of the problem by sensory panel methods not only permitted identification of the source of the trouble, but also pointed to the solution. The labels on hand were salvaged by opening the packages, distributing the bundles, and holding for several days in a well-ventilated room at elevated temperatures to dissipate the residual solvent. The trouble was avoided in new runs of labels by increasing the drying cycle on the lacquer overprint. The minimum time, temperature and ventilation conditions of the drying cycle were established by sensory panel evaluation of candy bars wrapped in samples of the labels.

A further example can be cited of a serious consumer complaint of odor and flavor contamination, which was found to be directly due to the printing, even though there had been no change in the printing process. A manufacturer of a confection decided to start overwrapping both the individual units and the multiple-unit cartons in cellophane, to enhance appearance and consumer appeal. Immediately, even before these were distributed for sale, his quality control staff reported serious off-odor and off-flavor in the product, clearly characterized as due to oils and residual solvents in the printing ink and overprint varnish used on the cartons. Naturally, he blamed his carton supplier. However, the latter had made no change in his ink or overprint varnish, so he called us in to investigate.

We found significant variations in residual printing odor from lot to lot, caused both by the ink formulation and overprint varnish, and by conditions of drying and aeration after printing. However, the controlling factor turned out to be the introduction of the cellophane overwrap. While residual printing odors had previously been dissipated outwardly instead of being absorbed into the packaged confection, they were now sealed in by the cellophane overwrap. Consequently, they had diffused into the product itself. Since the confectioner insisted on his cellophane overwrap, the solution was found in careful odor and flavor quality control of the printing system, and adequate drying and aeration of the cartons after printing.

Odor and flavor problems increasingly beset the producer of printing wrapping materials, packages and containers. But these problems can be defined accurately, and effective solutions can be found through the use of trained sensory panel methods, together with a generous sprinkling of common sense and ingenuity

Training Your Own Sensory Panel

Although many papermakers and converters now rely on us to conduct their quality control work, others have found it convenient to become "independent" of our continuing service. Even when only limited laboratory facilities are available in the processor's plant, we are often able to train his personnel, and to institute control procedures which can be handled by the client himself. This is often the best method of quality control, since it provides for continuous, "on-the-spot" checks on plant operation, if necessary.

The biggest step a paper company or converter can make toward the elimination of complaints, is to learn to think in terms of close quality control. He must learn to foresee odor and flavor problems, and by making actual use tests, to cope with them before they arise. The results will be measured not only in the reduction of complaints, but also in an intangible but satisfying sense of security.

PRICES OF FIBERS

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$83.00/ 86.00§	$90.00/ —	§$77.50/ 90.00
Kraft, Blchd.	152.00/155.00	155.00/ —	$155.00/ —		$155.00/ —
Kraft, Blchd. Hdwd.	150.00/, —		$137.50/ —		
Kraft, Semi-bleached	140.00/145.00	135.00/140.00	$137.50/140.00§	*140.00/ —	
Kraft, Unbl.	117.50/125.00	120.00/130.00	†125.00/130.00	125.00/145.00	
Sulphite, Blchd.	150.00/ —	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd.	130.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$15.00/$15.25
No. 1 Unblchd. Muslins	17.00/ 17.75
Blchd. & Unblchd. Underwears	17.00/ 18.00
No. 1 Light Silesias	7.25/ 7.75
No. 1 Light Blue Overalls	9.00/ 9.50
Percales	7.00/ 7.50
No. 1 Light Prints	5.50/ 6.00
Suntan Khakis	6.00/ 6.50
Cottonades	3.50/ 4.00
No. 1 Washables	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.50
Cotton Pants & Overalls	2.25/ 2.50
Thirds and Blues, Repacked	1.75/ 2.00
No. 2 Roofing	25.00/ —

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	May 22 Per 100 lbs.
Grade 1 n.a.	
2	$9.10/ $7.70
3 1st cut—felting	7.00/ 5.80
4	5.25/ 4.20
5	3.75/ 3.05
6	3.00/ 2.75
7	2.75/ —

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.50/$6.00
Foreign Scrap Burlap	5.50/ 6.00
Heavy Wool Tares	6.50/ —
Foreign Manila Rope	6.25/ 6.75
Domestic Manila Rope	7.00/ 7.25
Domestic No. 1 Sisal Strings	5.25/ 5.75

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York June 4	Boston June 4	Chicago June 4	Los Angeles June 4
No. 1 Mixed Paper	12.00/ 14.00	14.00/ —	13.00/ —	14.00/ —
No. 1 News	17.00/ —	17.00/ —	14.00/ —	14.00/ —
Overissue News (Lg. size)	18.00/ 19.00	17.00/ 18.00	19.00/ —	14.00/ —
Mill Wrappers	20.00/ —	17.00/ —	16.00/ —	14.00/ —
Old Corrugated Containers	25.00/ 26.00	24.00/ 25.00	25.00/ —	19.00/ —
Super Resorted Kraft Paper	46.00/ 48.00	45.00/ 50.00	45.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	40.00/ 42.00	45.00/ 47.00	45.00/ —	35.00/ 40.00
(Semi-chem. medium)	45.00/ 55.00	47.50/ 55.00	47.50/ 55.00	— / —
New 100% Kraft Corr. Cuts	55.00/ 65.00	55.00/ 65.00	65.00/ —	45.00/ —
New Br. Kraft. Env. Cuts	90.00/ 95.00	85.00/ 95.00	70.00/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	65.00/ 75.00	65.00/ 75.00	60.00/ —	60.00/ —
New Br. Kr. Bag Waste Unprntd	75.00/ 80.00	80.00/ 90.00	75.00/ —	60.00/ —
No. 1 Groundwood Shvs.	45.00/ —	35.00/ 42.00	30.00/ —	27.00/ 30.00
White Newsblanks	80.00/ 82.50	70.00/ 80.00	55.00/ —	60.00/ —
No. 1 Soft White Shvs.	75.00/ 80.00	75.00/ 80.00	70.00/ —	— / —
Super Soft Wh. Shvs.	80.00/ 90.00	85.00/ 90.00	80.00/ —	— / —
Hd. Whit. Shvs.	100.00/105.00	110.00/115.00	105.00/ —	100.00/ —
Hd. Wht. Env. Cuts	120.00/130.00	125.00/135.00	105.00/ —	115.00/ —
Col. Tab. Cards	60.00/ 65.00	70.00/ 72.00	65.00/ —	42.50/ —
Manila Tab. Cards, bales	90.00/ 95.00	90.00/ 95.00	85.00/ —	64.00/ —
No. 1 Col. Ledger	35.00/ 40.00	40.00/ 42.50	50.00/ —	35.00/ —
White Ledger	65.00/ 70.00	70.00/ 75.00	65.00/ —	45.00/ —
Mixed Book & Mag.†	26.00/ 27.00	27.00/ 30.00	17.50/ 20.00	— / —
No. 1 Rep'd. Hvy. Books‡	29.00/ 30.00	31.00/ 33.00	32.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood. § Dckl.

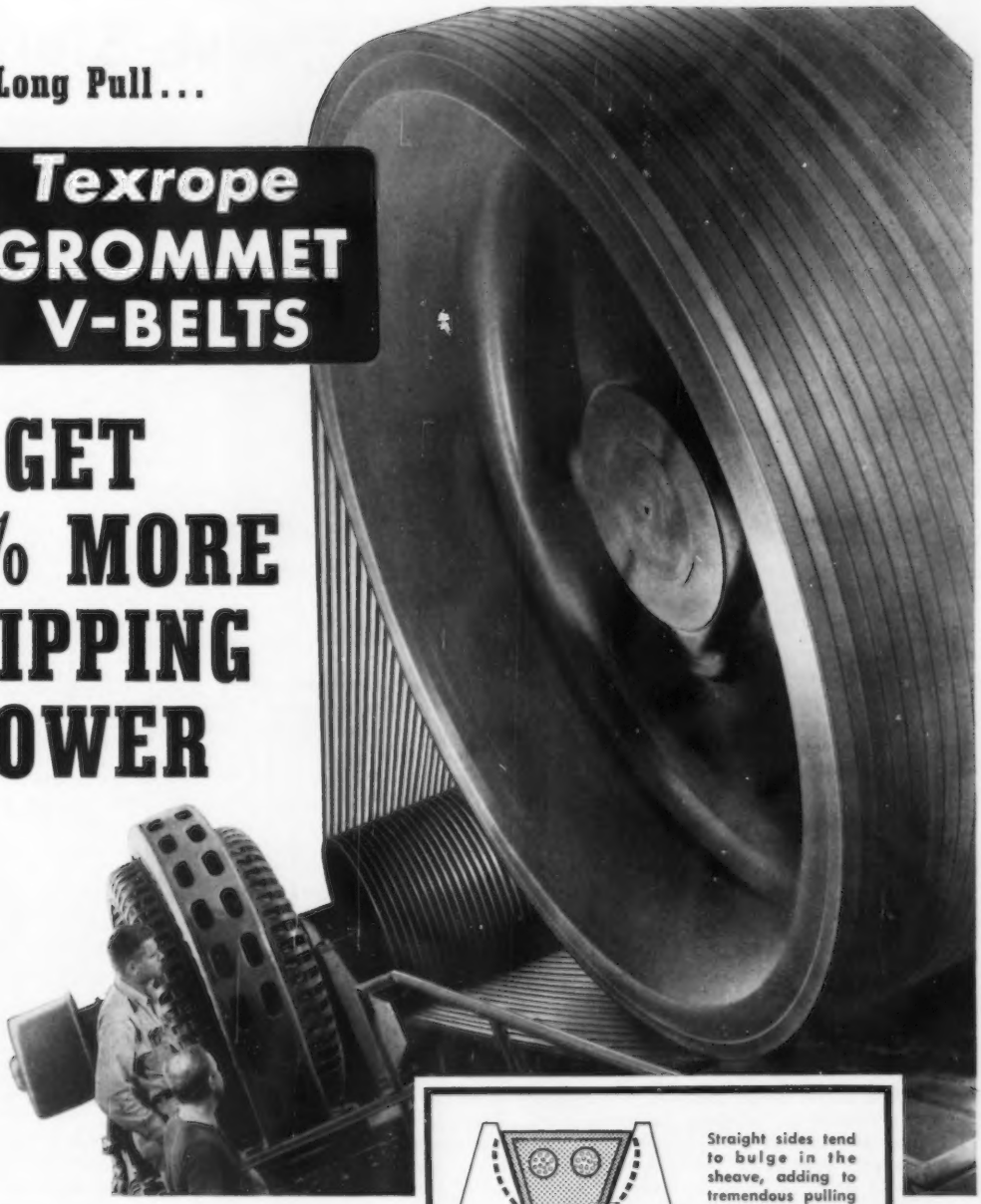
PRICES OF MATERIALS

Aluminum sulphate:			
cml bags, c.l. wks.	cwt.	$1.85	/ —
iron-free, c.l. wks.	cwt.	3.55	/ —
Casein, acid prec.:			
dom. sh. pt. c.l. (30 mesh)		32.00	/ —
Arg. ex. dock, duty paid		21.00	/21.50
New Zeal., do.		25.00	/26.00
Caustic soda:			
c.l. wks. solid, 76%	cwt.	4.10	/ —
flak. & grd. 400-lb. drums, c.l.		4.50	/ —
liquid 50% tanks		2.80	/ —
liquid 70% tanks		2.90	/ —
China clay:			
dom. air-float, c.l. (Geo. Wks.)	ton	10.00	
water-washed, lump, filler,	ton	11.00	
coating	ton	17.60	/40.00
Imported, ex. ship.	short tons	20.00	/35.00
Chlorine:			
single-unit tanks, works.	cwt.	3.05	/ —
multiple unit, 2-5 cars per yr.		3.92	/ 5.12
Formaldehyde:			
USP, inh. dms. c.l. wks.	lbs.	.0675/	—
lcl., E. wks.	lb.	.072	/.0725
Lime:			
hydrated (bulk, c.l.)	tons	20.21	/ —
Gum rosin:			
K, M, N, drums, c.l. Savan,	cwt.	8.04	/ 8.08
Rosin size:			
70%, gum & pale grds., tank cars, south, sh. pt.	cwt.	7.24	/ 7.28
Salt cake:			
dom. bulk, 100% anh. wks.	ton	28.00	/ —
imp. f.o.b. Saskatchewan	ton	18.00	/ Cana. funds
Soda ash:			
light, 58%, bags, wks.	cwt.	1.80	/ —
bulk	cwt.	1.50	/ —
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.10	/ —
drums, c.l. wks.	cwt.	1.45	/ —
(47°) Be. WW.			
tank-cars, wks.	cwt.	1.75	/ —
drums, c.l. wks.	cwt.	2.10	/ —
Sodium peroxide:			
dms. c.l. E. of Miss.	lb.	.186	
l.c.l. (same basis)	lb.	.191	/ .196
Soybean, protein:			
chem. isol., wks. c.l. bags	lb.	.23	/ —
Sulphuric acid:			
60° Be. cbys. c.l. wks.	cwt.	2.00	/ —
l.c.l. wks.	cwt.	2.45	/ —
tank-cars, wks.	ton	18.60	/ —
Sulphur:			
crude, c.l. mines, contract,	long ton	26.50	/ —
f.o.b. vessels Gulf	do.	28.00	/ —
Sulphur dioxide:			
liquid, coml. cyl., wks.	lb.	.10	/ .12
multi-unit cars, wks.	lb.	.0535/	
Starches:			
corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.39	/ —
white, dextrins	cwt.	7.55	/ 7.80
chlorinated	cwt.	8.15	/ —
potato, Idaho, c.l. wks.	cwt.	6.60	/ —
East, fr. all. 50 cents cwt.			
potato, Maine, f.o.b. wks.	cwt.	7.75	/ —
Talc:			
c.l. wks., N.Y.	ton	28.00	/ —
c.l. wks., N.Y.	ton	27.00	/37.00
Titanium dioxide:			
anstase, c.l. deld. E. bags Nlb.		.24½/	—
l.c.l. deld.	lb.	.25½/	—
rutile, c.l. deld.	lb.	.26½/	—
l.c.l. deld.	lb.	.27½/	—

Over the Long Pull...

Texrope GROMMET V-BELTS

GET 33% MORE GRIPPING POWER



Straight sides tend to bulge in the sheave, adding to tremendous pulling power.

You'll get less pulley slip... ⅓ more gripping power than ordinary belts with *Texrope* grommet belts. This means higher drive efficiency and less surface wear.

There are three big factors contributing to superior grip of Texrope *V-belts.*

1 ***Endless grommet construction*** ... hugs sheave tightly, with no overlapping cords to cause stiff belt sections.

2 ***Straight sides*** ... tend to bulge and grip sides of sheave as belt bends around it.

3 ***More rubber*** ... gives greater flexibility, minimizing slip even further.

Call your nearest Allis-Chalmers distributor and find out more about *Texrope* V-belts, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

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A-4890

New Developments Improve Stora's Groundwood Operations

How new equipment was developed and improved methods used in designing the new groundwood mill and modernizing the older one at Kvarnsveden.

Bengt Söderberg

Stora Kopparbergs Bergslags AB
Kvarnsveden Pulp and Paper Mills,
Sweden

A number of problems were given special consideration, in connection with building a new groundwood mill and rebuilding the old groundwood mill at the Kvarnsveden pulp and paper mills. As these problems are common to many groundwood mills, a short account of them is given. They are:

1. Automatic feeding of wood to the grinders.
2. Treatment and operation of the pulp stones.
3. Power regulation with the Torductor.
4. Using rejects from coarse screening.

The capacity of the paper mill has just been increased to 205,000 tons of paper per year and the new newsprint machine, responsible for the increase, is now going through the start-up phase. A separate groundwood mill has been built to supply this paper machine, a flow sheet of which is shown in Figure 1.

The two groundwood mills have a total capacity of 170,000 tons per year. Formerly there were 32 Miag grinders of 700 h.p. each. These grinders have just been replaced by 11 Voith chain grinders of 2300 h.p. each. The sulphite mill has been rebuilt to make high yield sulphite pulp with a yield of 60-70 percent (calculated on the wood).

The new groundwood mill is up-to-date and contains six Voith chain grinders, data on which are shown in Table I. The capacity of the new groundwood mill is 200 tons of A.D. pulp per day. These grinders are provided with automatic wood feeding as is described herein. Details with regard to temperature in the grinder pits and brushing of stone surfaces with steel brushes is also given.

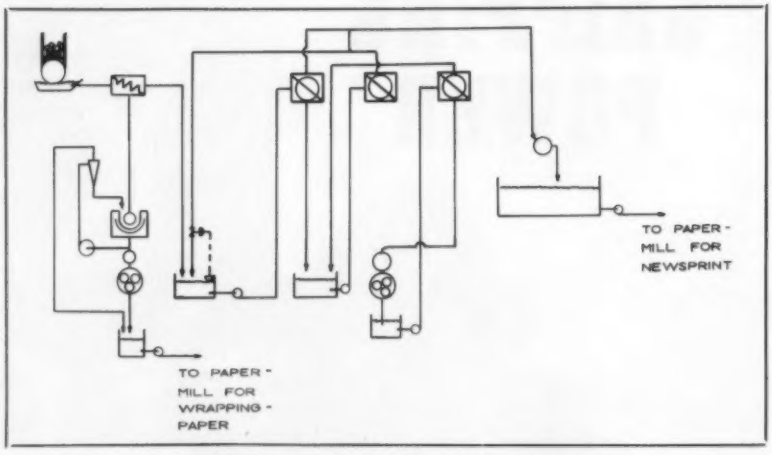

FIGURE 1—FLOW SHEET of the new additional groundwood mill.

The course screens are three Reemer screens. The rejects are treated in a new type of refiner, which will also be dealt with in this article. The fine screens are Cowan screens in the first stage and Trimbey screens in the second stage.

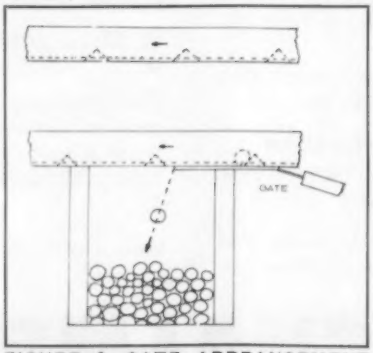

FIGURE 2—GATE ARRRANGEMENT feeding logs to grinder.

The screening system is built according to the cascade principle. The deckers work under static head only and thicken to five percent consistency. Dilution to 3 percent is now done with white water from the paper mill and the pulp is fed to an equalizing and storage chest, the volume of which is 900 32000 cubic ft.

Automatic Feeding of Wood To Grinders

Previously, there was a groundwood mill with 32 Miag grinders of 700 h.p. each with a production of 13 tons A.D. pulp per day. At that time the grinders required 26 men per shift, each man feeding 12 solid cubic meters (3.3 cords) per shift. By replacing the Miag grinders with Voith grinders of 2300 h.p., a calculated feeding capacity of 21-32 solid cubic meters (5.8-8.8 cords) per man during one shift was obtained.

When planning to rebuild the old groundwood mill and build a new one it was deemed advisable to carry out experiments with respect to automatic woodfeeding. In co-operation with Einar Eriksson & Co., Stockholm, a pilot plant was built. This pilot plant has served as a prototype for equipment, which is now in operation in the new groundwood mill. Productivity has been increased to 110 solid cubic meters (30 cords) per man during one shift. It would be comparatively easy to increase the capacity to 150 solid cubic meters (41 cords) per man and shift. See Table II.

Operation of Feeder

The wood from the barking drum travels over accelerating rolls which arrange the logs parallel to each other while travelling to a pocket. Passing through this pocket is a conveyor chain provided with spurs of triangular cross section. A log is removed from the pocket by every second spur and fed to the desired grinder through a gate at the top. The gate opens and closes pneumatically. See Figures 2 and 3. When desired, wood can be diverted to a buffer from where it subsequently can be fed automatically to the grinders. For this operation, the plant requires one man per shift for five grinders each producing 40 tons A.D. pulp per day. This man operates the gates and keeps the logs in a parallel position. The plant has now been in operation for five months and is working satisfactorily. Another automatic feeding arrangement is now under construction in the rebuilt groundwood mill containing 11 grinders.

Groundwood Quality Problems

When the new groundwood mill had been in operation for a while, it appeared that the freeness was fluctuating, strength was too low and also fluctuating, causing a decrease in the paper production. To remedy this situation, all pertinent data were collected and the figures were statistically evaluated. In Table III are shown the tests which were conducted every two hours.

Further, the velocity in the slice was calculated according to the formula,

$$v_u = 0.94 \sqrt{2g.h.}$$

The wire speed, the opening of the slice, the couch vacuum and the strength of the paper were also measured. These measurements have been made available to the grinderman and the machine tender. In this way the groundwood mill and the paper mill have become more closely associated and it is now possible for the grinderman to follow his work from the stones to the finished paper.

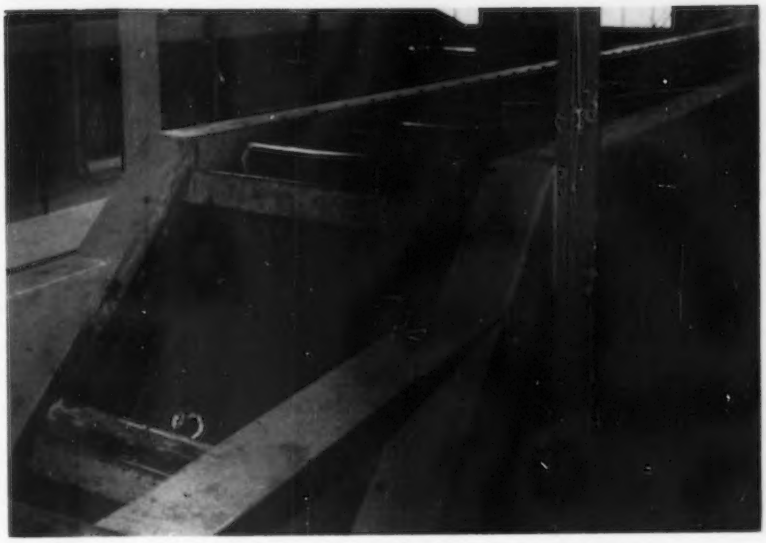

FIGURE 3—LOGS AUTOMATICALLY DROPPING into a grinder pocket.

The grinders are provided with counters, which also record the quantity of wood processed every 15 minutes. Meters to record kilowatt hours were also installed. Kilowatt hours per ton of pulp are calculated every day for each grinder. A separate record is maintained of the stone dressings.

The efficiency of the paper machine is determined every day and is computed according to the formula.

$$7 = \frac{T}{g \,.\, v \,.\, tr \,.\, t \,.\, 6 \,.\, 10^{-7}}$$

T = net production

Table I

DATA ON VOITH CHAIN GRINDERS

Wood length, m.	1,030
Grinding surface, m^2.	1,3
Stone, ø, m.	1,8
Speed, r.p.m.	250
Peripheral speed, m/sec.	23,5
Power consumption:	
No load, kw.	50
With load, kw.	1700
With load, h.p.	2300
Wood quantity, solid m^3. per hour	3-4
Stones: Norton	4
Norröna	1
Ideal	1

Table II

WOOD FEEDING, SOLID M^3[1] PER MAN PER SHIFT
WOOD FEEDING, CORDS[2] PER MAN PER SHIFT

Pocket-grinders	Chain grinders, conventional feeding	Chain grinders, automatic feeding
[1] 12	21-32	150
[2] 3,3	5,8-8,8	41

Table III

Location	Cons. %	Temp. °C	Freeness	Folding	Breaking length	Wet strength
Grinder pit	X	X	X	—	—	—
Screens						
1st stage	X	X	X	—	—	—
2nd stage	X	X	X	—	—	—
3rd stage	X	X	X	—	—	—
Screened pulp	X	X	X	X	—	—
Pulp from stock tank	X	X	X	X	X	X
Mixed stock	X	X	X	X	—	X
Stock from headbox	X	X	X	—	—	—

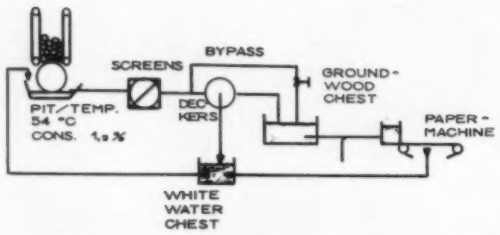

FIGURE 4—Original stock and white water system.

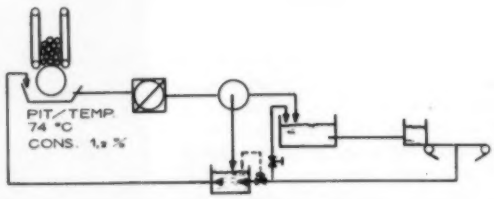

FIGURE 5—NEW ARRANGEMENT gave two closed systems.

g = basis weight, g/ sq meter
v = speed meter/minute
tr = trim width from the winder
t = time of operation minus time of shut-down.

Early examination proved the grinding temperature to be too low and the fluctuations too great, thus making it difficult to maintain an even freeness of the pulp.

Raising Pit Temperature

Figure 4 shows how the pulp and white water system was originally arranged: one part of the screened stock is thickened and the rest is used for dilution in the stock chest. With this arrangement a temperature in the grinder pit of 54°C was obtained. A change was made so that all pulp was thickened and dilution was done with white water from the paper mill. See Figure 5. In this way, two more closed systems were obtained with considerably lower heat losses. The temperature was raised to 74°C in the grinder pits at a consistency of 1.2 percent and the temperature curve was more uniform. The reason that still higher temperature was not obtained was that the deckers only thickened to a consistency of 5 percent. Figure 6 shows the temperature curve before and after the change.

After this change, variations in wood quality had less effect on pulp quality and there was a pronounced improvement in control of desired freeness.

Through re-circulation of white water from the deckers in larger quantity to the stones, the tendency to plug the valleys in the stone surface with fines has been reduced, since the white water from the deckers contains 600 mg. of fines per liter and the white water from the paper mill 1400 mg. of fines per liter.

One of the major problems still to be solved however was the inconvenience caused by plugging of the stone surface. Adjustment of the grinding pressure—though helpful—is not an adequate remedy. As is shown in Figures 7 and 8, it is possible to change the quality of the pulp by altering the gauge pressure. The tests were made on a Miag grinder.

New Method of Dressing

In 1946, a new method of stone dressing was developed by E. Eftring of Stora Kopparbergs Bergslags AB, central laboratory. The method involves brushing the stone surface with rotating steel brushes. The brushing procedure has been employed for some years on the Miag grinders and contributed to a substantial increase in paper production. After approximately six months, brushing was also introduced on the chain-grinders and it proved to have a favorable effect.

The result of higher and more even

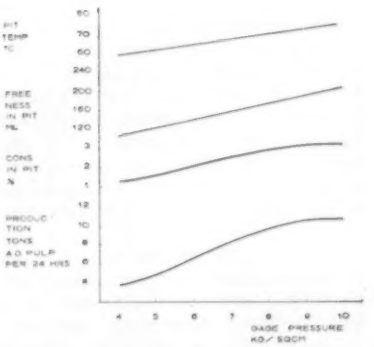

FIGURE 7 — How grinding pressure affected pulp quality.

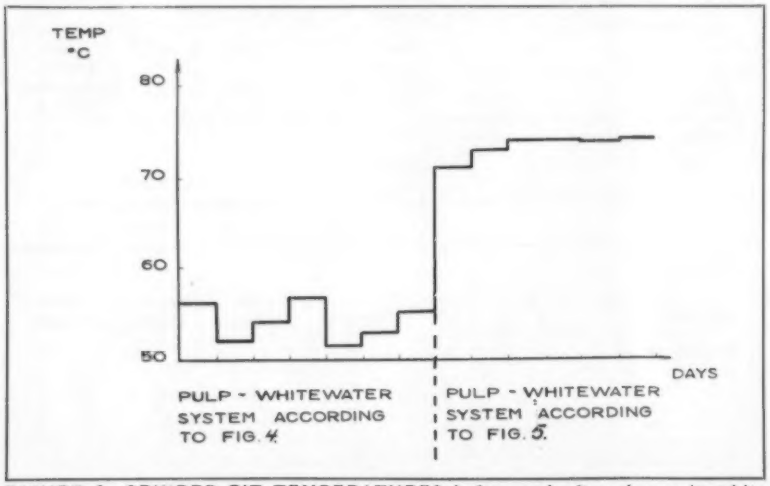

FIGURE 6—GRINDER PIT TEMPERATURES before and after change in white water system.

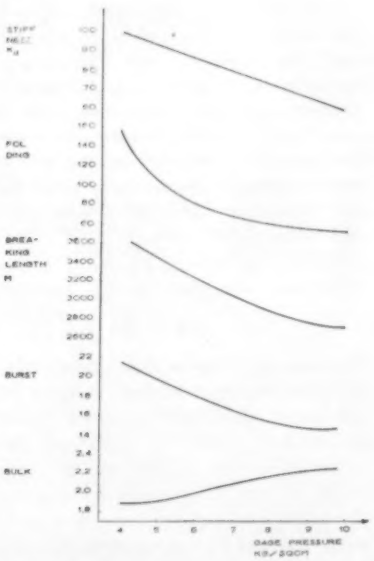

FIGURE 8—FURTHER EFFECTS of pressure on pulp quality.

temperature together with brushing is shown in Figures 9 and 10. Figure 9 shows a typical freeness-curve before and Figure 10 the freeness-curve after raising the temperature and using brushing. Higher and more uniform strength in both the pulp and paper was obtained with a marked increase in production.

The standard deviation (δ) for the freeness of the groundwood has been determined according to the formula

$$\delta \sqrt{\frac{\Sigma(x\text{-}x)^2}{N}}.$$

δ has earlier been >15 and is now <8, that is, the coefficient of variation ($v = \frac{\delta}{x} .100$) is now <9 percent.

Through the above methods the following significant results were obtained:

1. The strength of the pulp has increased.

2. The strength of the paper has increased.

3. The sulphite content has been reduced.

4. The speed of the paper machine has increased.

5. The efficiency of the paper machine has increased.

The exact results are shown in Figure 11. The measures were introduced on "Day 11."

Brushing of a stone is carried out when the freeness of the pulp in the grinder pit is too low. As the freeness

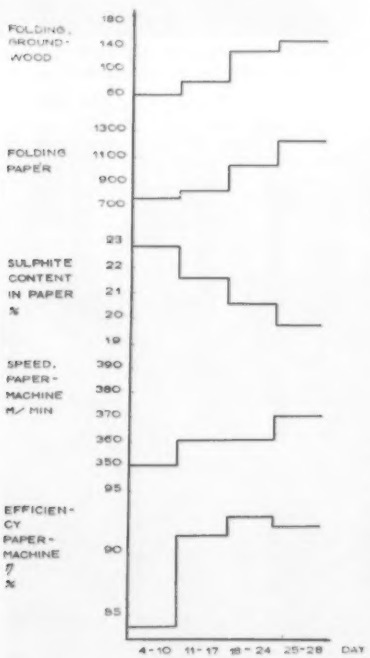

FIGURE 11—IMPROVED quality and running resulting from changes.

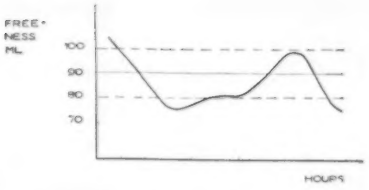

FIGURE 9—FREENESS VARIATION at lower temperatures and without brushing.

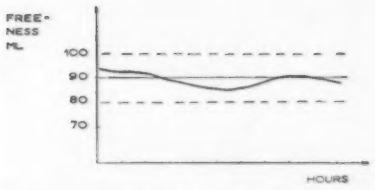

FIGURE 10—MORE UNIFORM FREENESS from higher temperatures and brushing.

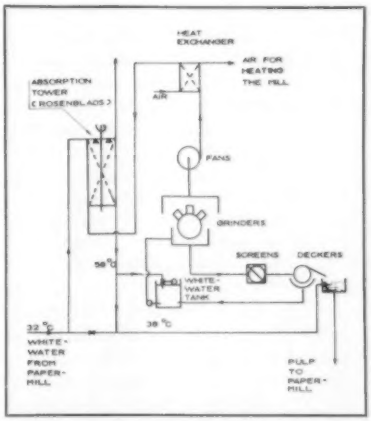

FIGURE 12—HEAT RECOVERY system on Miag grinders.

drops again after brushing, one additional brushing is done. If the freeness still continues to drop sharpening is done. In this way it is not only possible to maintain an even freeness, but also to determine the necessity of sharpening the stone. Consequently, many unnecessary sharpenings can be avoided and, at the same time, the strength of the pulp can be kept higher. The amount of coarse fiber bundles is reduced thus meaning fewer breaks on the paper machine.

Heat Recovery

It is easier to regulate the freeness of the pulp if the temperature in the grinder pit is high. Raising the temperature in a groundwood mill containing grinders with low wood pockets—for instance pocketgrinders—by designing two white water systems, will increase the losses of heat considerably due to the steam leaving the pockets or grinder pits. For this reason a heat recovery system was considered for the Miag grinders. In principle, the steam from the grinders should pass through an absorption tower where the absorbing medium is white water from the paper mill. Besides the temperature increase resulting from changing the white water system, it was calculated that the pit temperature could be increased by 6°C. The arrangement is shown in Figure 12.

From Figure 11 it can be seen how substantial the effect of the strength of the groundwood is on the finished paper. The fold test of the groundwood pulp has increased by about 150 percent and the fold of the paper has increased by nearly 70 percent, although the sulphite content has been reduced by about 18 percent.

The affect of the strength of the sulphite pulp on the finished sheet was also examined. This was accomplished by beating two different sulphite pulps in a Valley laboratory beater. Sulphite pulp of different degrees of beating was mixed with groundwood pulp at a ratio of 20 percent to 80 percent. One sulphite pulp was a normal pulp with a yield

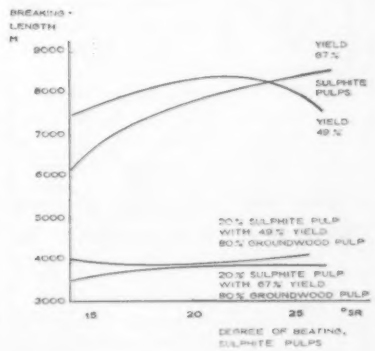

FIGURE 13—Effect of % sulphite in furnish on breaking length.

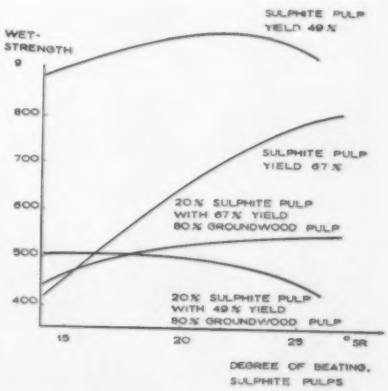

FIGURE 14—Effect of % sulphite in furnish on wet strength.

FIGURE 15—Wet web strength tester.

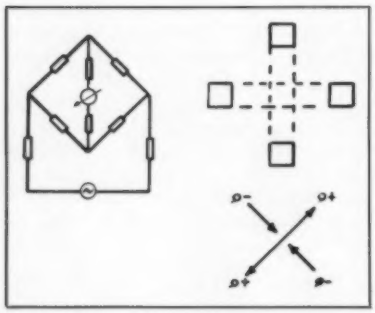

FIGURE 17—Basic construction of Torductor regulator.

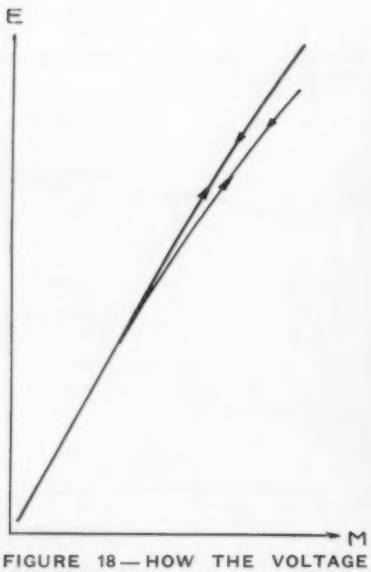

FIGURE 18—HOW THE VOLTAGE VARIES with the torque, as used in the Torductor.

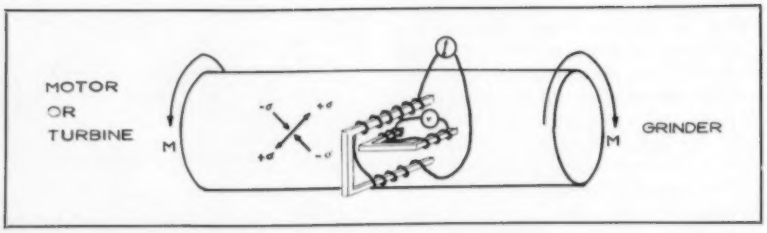

FIGURE 16—NEW TORDUCTOR motor regulating system.

of 49 percent and the other pulp a high yield pulp with a yield of 67 percent.

From the results shown in Figure 11 and from the investigations done at the laboratory it is evident how important it is to concentrate upon making a high quality groundwood pulp. Figures 13 and 14 show that at sulphite contents of 20 percent, the wet and dry strength of the sulphite pulp has very little effect on the strength of the mixed pulps. A slight beating of the sulphite pulp to 18-24°SR could perhaps be recommended to parry strength variations in the groundwood pulp to some extent.

Obviously, it is not sufficient to study only the composition of the groundwood pulp, it is also essential to investigate the physical properties of the sulphite fibers, as well as of the sheet and also to study how the wet and dry strength is influenced by the sheet formation, the top press roll and the press section.

The wet strength of the groundwood pulp used in the mix was 385 g. The wet web strength tests were made on a wet strength tester developed in 1951 by Anderson and Bergstrom, Swedish Forest Products Laboratory and built by the Central Laboratory of Stora Kopparberg, Figure 15. Both stress and strain can be determined on this device. The content of solids in all the sheets examined was 40 percent, an amount open to discussion.

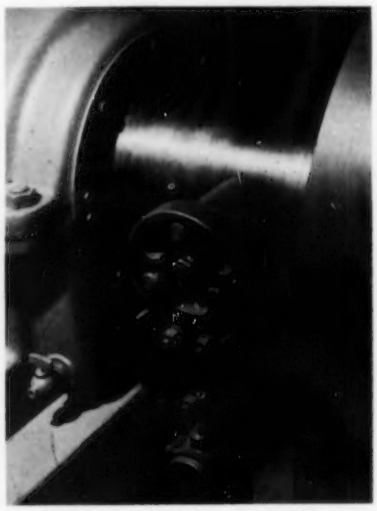

FIGURE 19—INSTALLATION of Torductor on grinder motor shaft.

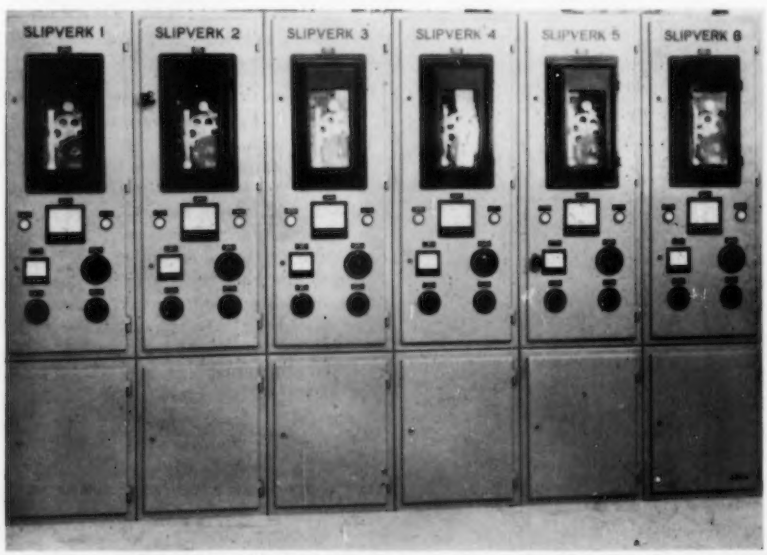

FIGURE 20—GRINDER ROOM CONTROL PANEL includes Torductor instruments and log feeding records.

Power Regulation With Torductor

All the 17 chaingrinders, of which eleven are driven by water-turbines and six by electric motors, have been fitted with the new torductor regulating system made by ASEA. It is the first time that this regulator has been introduced on a large industrial scale.

The basic construction of the torductor is shown in Figures 16 and 17. It consists of two U-formed electro-magnets of transformer laminations at right-angles to each other which are placed adjacent to the shaft to be regulated. There is an airgap of some millimeters between the electro-magnets and the shaft. One of the coils (primary winding) is connected to a source of alternating current, the other coil (secondary winding) is connected to the regulator circuit.

If the driving shaft is not subjected to any torque, no voltage is induced in the secondary winding. If on the other hand, the shaft is subjected to a torque M, principal stresses $\pm\delta$ are established in the surface of the shaft forming angles of 45° to the shaft axis as shown in figure 16. This causes a magnetic assymmetry so that a voltage is induced in the secondary winding. This force is then utilized for the purpose of controlling the torque in the shaft. In Figure 18 is shown how the voltage (E) alternates with the torque (M).

The motor for feeding wood to the grinder is a W.L. regulated d.c. motor regulated through a combined electronic and magnetic amplifier system.

Upon a decrease of torque, the speed of the wood feeding motor is increased and the load on the stone and the torque in the shaft are increased until the difference between the reference and the amplified Torductor voltage is reduced. Slight differences between the amplified Torductor voltage and the reference voltage result in changing the voltage to the W.L. motor from O to 380 V and in varying the speed of the motor from O to 2700 r.p.m. The Torductor is shown in Figure 19. The panel, from which the grinder load is controlled and where the wood feeding is recorded, is shown in Figure 20.

As with all other regulators, improper stone-dressing has an adverse affect on good regulation. Increasing the temperature in the grinder pit and brushing the stone surface proved to give a much more uniform coefficient of friction around the stone surface which, in turn, gave more uniform power regulation. The power regulation with the Torductor now works to our full satisfaction.

Our experience at Kvarnsveden leads us to believe that this Torductor regulating system is the only acceptable one where grinders are driven by water-turbines. It also proves highly advantageous where two or more grinders are connected to one motor.

4 Keys To Better Groundwood

The author describes some improvements in the groundwood mill at Kvarnsveden mills in Sweden.

Automatic wood feeding is used for the chain grinders. The capacity of each man is increased from earlier 3.3 cords per shift at the former pocket-grinders to 41 cords per man per shift at the new chain grinders.

High pit temperature advantages and brushing the stone with a steel brush are reported. A pulp of much improved quality was immediately obtained which resulted in increased paper production and a reduced sulphite content in newsprint.

A new power regulator for the grinders, is described and the ASEA Torductor, reported good results from it.

A new refiner for coarse screenings is discussed. The mill has developed this refiner for treating screenings, which after, or without, screening can be fed back into the pulp system. The refiner has also been used with success for handling other pulp mill materials.

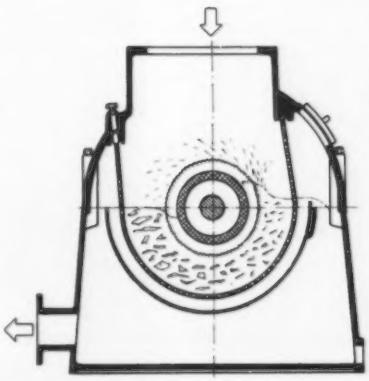

FIGURE 21—CROSS SECTION of new refiner shows: shell, screen plates and rotor.

Using Coarse Screen Rejects

At Kvarnsveden coarse screen rejects are refined to acceptable size for newsprint. Both groundwood mills have a total capacity of 650 tons of A.D. pulp per day and the wood consumption is about 400,000 solid cubic meters per year. The

FIGURE 22—REJECTS from groundwood coarse screens.

FIGURE 23—REJECTS AFTER TREATMENT IN REFINER. (Magnification is 3 times that in Figure 22)

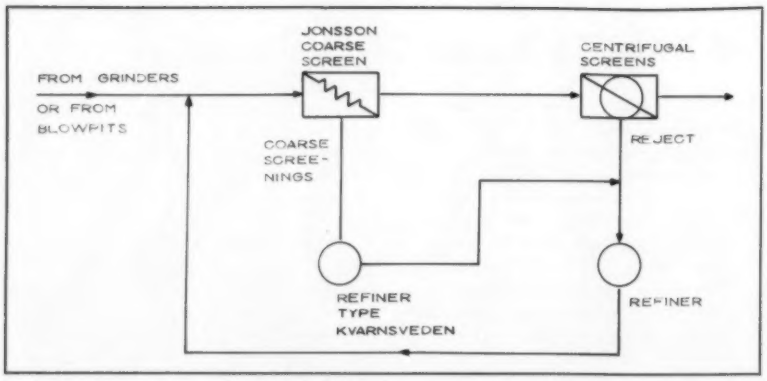

FIGURE 24—Refiner system flow sheet.

amount of coarse screenings at the new grinders is as low as 0.5 percent i.e. 2000 solid cubic meters of wood per year.

A refiner, developed at the mill, is placed after the coarse screens and reduces the rejects to a size suitable for further refining. This last refining is done at present at Haugmill and the pulp from that refiner can either be used for making wrapping paper or it can be recirculated into the pulp system.

Subsequent experiments have shown that it is possible to accomplish complete refining in the new refiner which we have developed. This refiner has also been used satisfactorily for other types of material, such as knots from sulphite coarse screening, semi-chemical pulp, etc.

Construction of Refiner

The refiner, Figure 21 consists of a rotor, a shell, and a screen plate, enclosed in a casing. The rotor is driven by V-belts from an electric motor. The lower section of the casing consists of a vat with outlet. The rotor is built up of shredder disks separated by spacers. The shell, located in the lower section of the casing, has an adjustable dam at the outlet. The screen plate has tapered holes. The rotor operates at a speed of about 1400 r.p.m. with a 40 h.p. motor.

Operation of Refiner

The material to be refined is fed into the machine with water and is broken down by the shredding action of the rotor. The impellor blades maintain a vigorous stirring and a pulsating action in the material which promotes screening and feeds the material in refined form through the screen plate, over the outlet dam, and into the vat. The coarser fragments remain between the rotor and screen plate until they are sufficiently refined to pass the plate.

The clearance between the rotor and the screen plate can be adjusted to suit the material being handled. The plates can also be changed.

Figure 22 shows a photograph of coarse screenings before and Figure 23, after treatment in the refiner. Figure 24 shows the refiner system.

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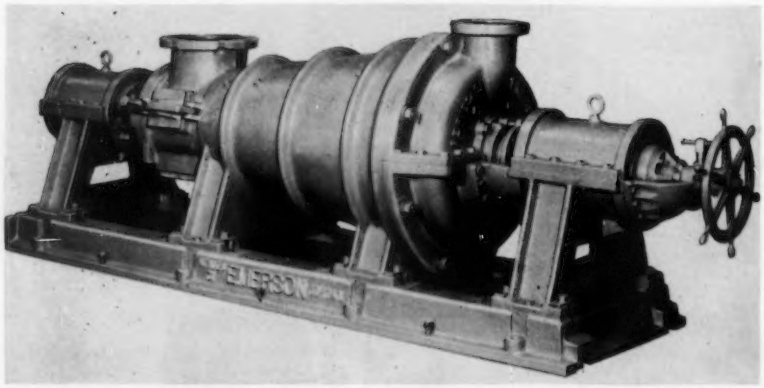

Jordan Has New Features Which Improve Efficiency

Improvements in design of the Series 31 Jordan have been announced by the manufacturer, John W. Bolton & Sons, Inc., Lawrence, Massachusetts. The redesign is aimed to improve both operating efficiency and economy.

Included among the changes are, a two-section, split head, on both large and small ends to permit quicker and easier removal of the plug without removing bearings and packing assemblies from the shaft. Bearing assemblies consisting of two anti-friction Timken roller bearings, completely encased, in both radial and thrust ends, designed for oil lubrication. A hammered steel shaft is pressed into the plug body under 60 tons hydraulic pressure. Stainless steel or brass sleeves, shrunk onto the shaft, extend from the plug through packing boxes on both shell heads.

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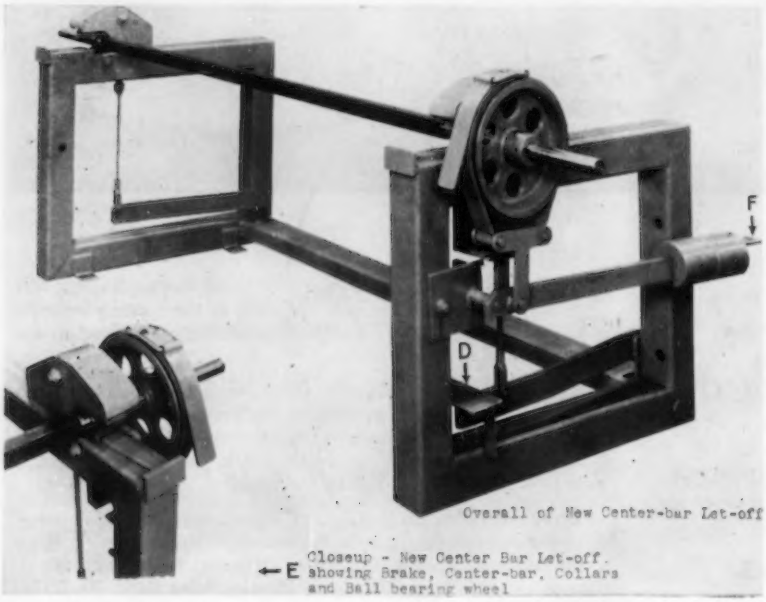
As in all nine other models, the Series 31 is equipped with the bolton hydro truss shell fillings and wedgeless plug fillings.



Overall of New Center-bar Let-off

←E Closeup - New Center Bar Let-off. showing Brake, Center-bar, Collars and Ball bearing wheel

Improved Center Bar Let-Off

A new heavy duty, extra strong Center bar Let-off, which can be bolted to the floor or attached to a machine, has been developed by Mount Hope Machinery Co., Taunton, Mass.

In operation, the Center bar rotates on rugged phenolic casters which are designed to withstand the shock of the heavy roll hitting them when the roll is put in place. The caster also facilitates maximum free turning with minimum friction wear to the caster and the Center bar. Specially designed guides position and hold the Center Bar laterally so that the brake drum and the brake bands are aligned perfectly and prevent sidewise motion.

A self-locking clamp automatically locks and holds the Center bar when it is pushed into place. The locking mechanism is protected by a heavy steel case. Release of the Center bar is by means of a foot treadle operated from either side of the machine.

Two-piece, extra heavy duty brake bands are used with lightweight 8 inch diameter brake drums to give increased braking efficiency. The bands attach simply to the brake drum and apply pressure with equal effectiveness whether the roll is rotating clockwise or counterclockwise. An electric brake automatically releases tension when the cloth is running and also applies tension automatically as the machine being fed is stopped.

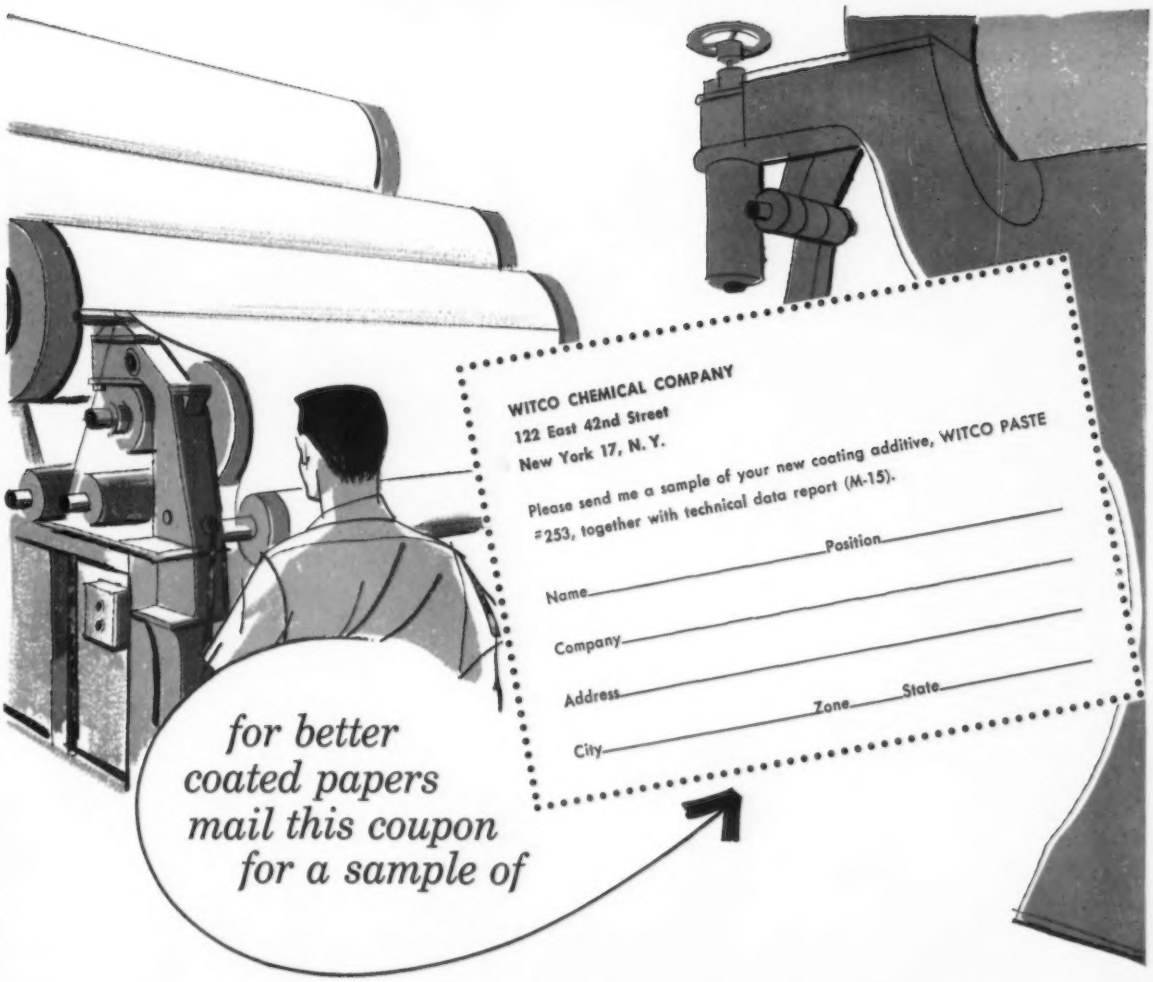
Automatic Logger Removes Wood from Rough Terrain

The Canadian Pulp and Paper Assn. has developed a logging machine which will automatically load and unload three-and-a-half tons of pulpwood and transport it through the woods over rough terrain.

Called Pulpwood Logger, the machine was developed by the Association's Woodlands Section as part of an organized industry program to fulfill specialized equipment requirements. It will be manufactured commercially by Clark Equipment Co., Construction Machinery Division, under a licensing arrangement. Production will start at Clark's Benton Harbor plant and at a new plant nearing completion by Canadian Clark, Ltd. at St. Thomas, Ont., within the next several months.

The machine is the first of its kind ever developed for the removal of pulpwood from wooded areas over rough terrain. It is 18 feet long and 9 feet high. Articulating and oscillating factors

(Continued on page 60)



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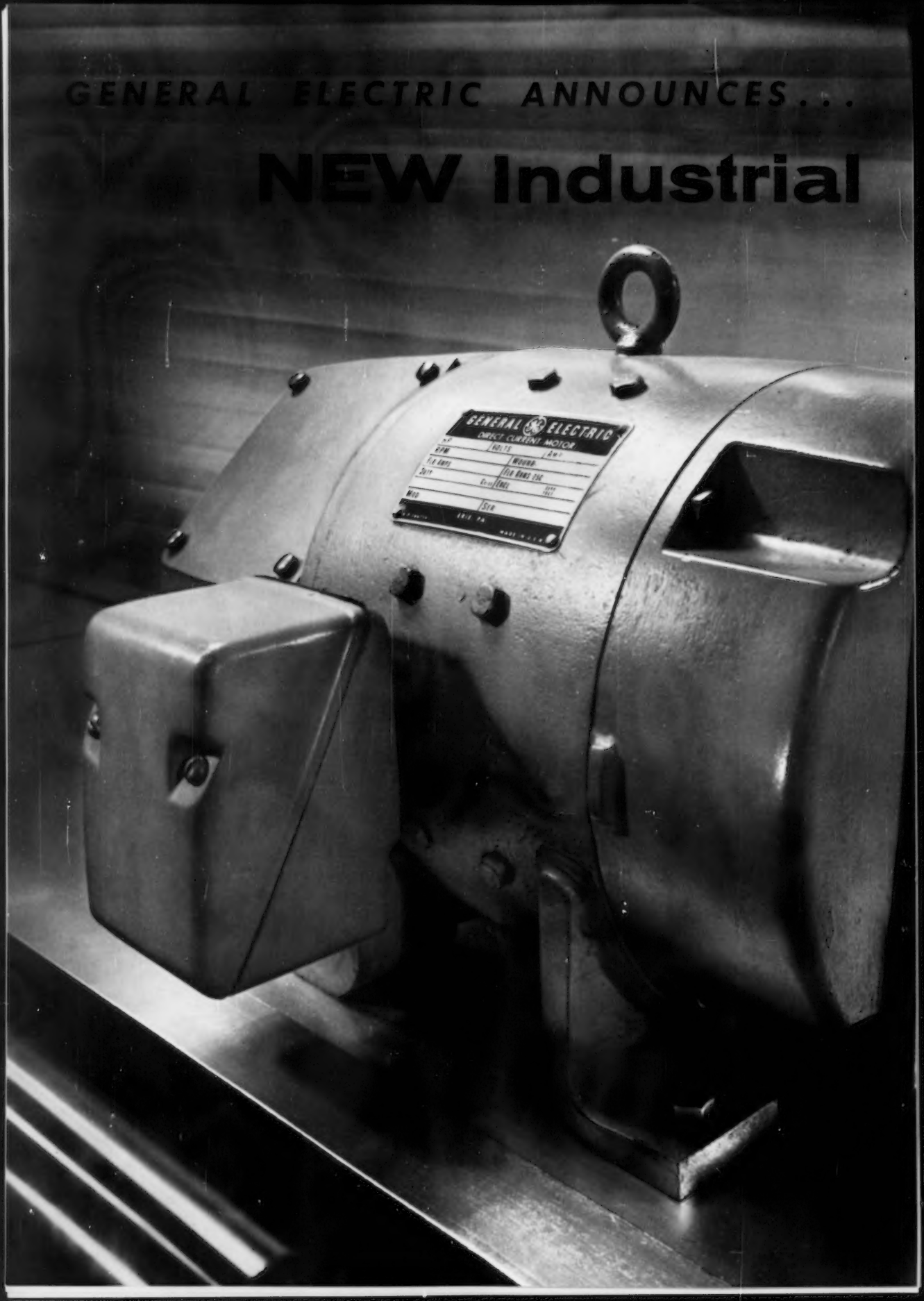

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Fig. 2651-A Gate

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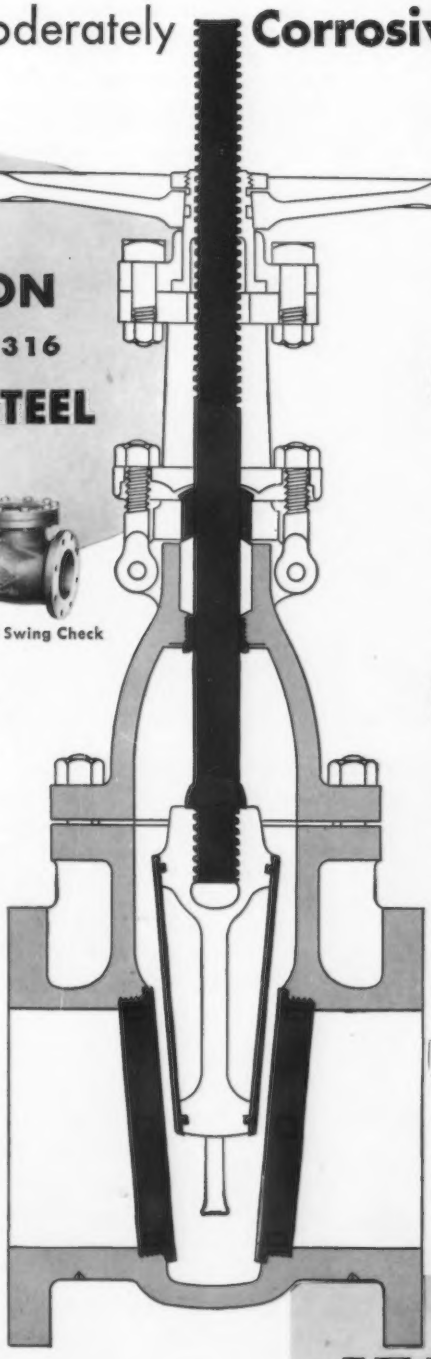
Trim

Fig. 2624 Swing Check



This combination provides corrosion resistance well above the moderate need in many processing services with an investment well below that for all-stainless steel valves.

Designed primarily for the chemical process industries, they are recommended for control of mildly corrosive liquids with minimum quantities of mineral acids, such as creosote in wood treatment, and many liquids carried in petroleum processing.

A major use is in pulp and paper processing, particularly in lines serving the digester, and in the chemical recovery cycle. Service records in lines carrying the valve-punishing "black liquor" give Jenkins Nickel Iron Valves top performance rating.

Jenkins *extra value* construction throughout. Get details — compare. See why they stretch your valve investment dollar — with longer service life, lower maintenance cost.

Every part in contact with fluid is the right metal to block corrosion and beat wear.

Cast NICKEL IRON

- **BODIES** Heavy duty, dimensioned for greater resistance to wear and abuse. Through port design in Gate Valves.
- **BONNET** Rugged construction, like body. Swing-type gland bolts. Screwed-in back-seating bushing. Deep stuffing box.
- **YOKE** Integral with bonnet in 2" to 4" sizes.
- **WEDGE** In 10" to 24" sizes, with Stainless Steel Wedge Rings.
- **COVER** In Check Valve.

Type 316 STAINLESS STEEL

- SPINDLE
- GLAND
- BONNET BUSHING
- SPINDLE RING
- WEDGE of I-beam structure in 2" to 8" sizes.
- WEDGE PIN
- WEDGE RINGS Rolled into Nickel Iron Wedge in 10" to 24" sizes.
- SEAT RINGS
- DISC and HANGER in Check Valve

PRESSURE RATINGS

2" to 12"—200 lbs. O.W.G.
14" to 24"—150 lbs. O.W.G.

ALSO RECOMMENDED for fluids used in electroplating, photograph finishing, textile bleaching, dyeing and finishing and heat treating of metals.

GET COMPLETE SPECIFICATIONS from your Jenkins Valve Distributor, or write: Jenkins Bros., 100 Park Ave., New York 17. Ask for Bulletin 118.

JENKINS VALVES

LOOK FOR THE DIAMOND MARK

SINCE 1864 TRADE JENKINS MARK

Jenkins Bros.

enable it to keep all four wheels on the ground regardless of topography. A universal joint midway between front and rear wheels permits front wheels to swing around at a 45 degree angle with rear wheels.

The unit has 4-wheel drive, 4-wheel brakes and both front and rear wheel steering. It will travel up to speeds of 30 miles per hour when road conditions permit, and is powered by a 100 horsepower engine.

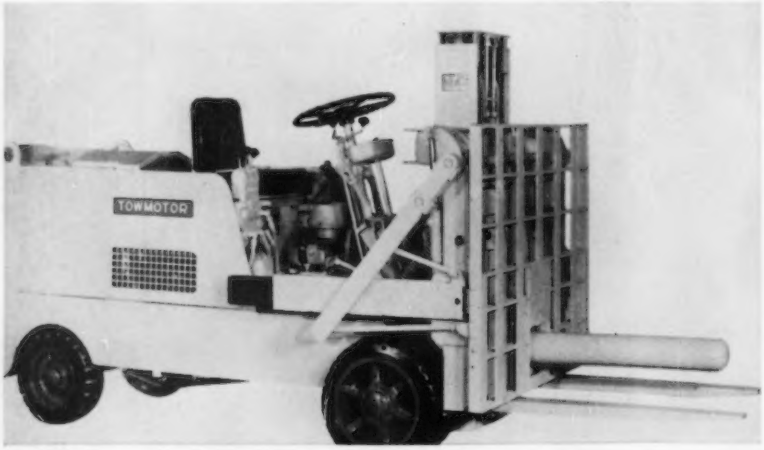
Approximately $250,000 was spent developing the Logger. The program was financed by a group of pulp and paper companies and was carried out by the Woodlands Section. The program was started in 1951.

Five prototype models are presently in operation in Canada. Two are in use in Western Ontario by Ontario Paper Co. and the remaining three in Eastern Quebec by Canadian International Paper Co. and Anglo-Canadian Pulp and Paper Mills.

Belt Fastener Cuts Maintenance Time in Half

A new, faster method of splicing conveyor belts with Flexco Belt Fasteners has been announced by the Flexible Steel Lacing Co., Chicago, Ill. The fasteners considerably reduce conveyor belt downtime during repair periods.

New templets eliminate the inconvenience of inserting fasteners from the pulley side of the belts. A boring bit and alloy steel wrench have been designed for use in standard electrical or air impact tools. Their use cuts in half the time formerly taken to apply fasteners by the hand method. The manufacturer states a two man team can apply fasteners on a 30 in. wide joint in from 15 to 20 minutes with this new equipment.

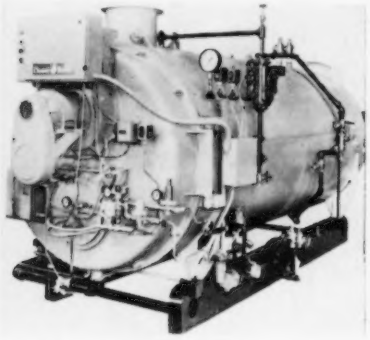


Fork Truck Attachments Announced

Two new lift truck attachments an unloader and a ram attachment are now being made available as optional equipment on all lift trucks of the Towmotor Corp., 1226 East 152nd St., Cleveland 10, Ohio.

The ram is a sturdily built, horizontal, pole-like device suspended from the fork support bar of the lift truck. The design of the ram is such that easy entry and withdrawal from open-center loads is possible. Control of the attachment is by the standard lifting and tilting mechanism of the lift truck. It can pick up or deposit materials at any height within the lifting range of the particular model to which it is attached.

The unloader is a compact but sturdy device which operates through the use of a hydraulic cylinder controlled from the operator's seat. Unloader design ensures that it will not interfere with normal truck operation.



Boiler Designed for Maintenance Ease

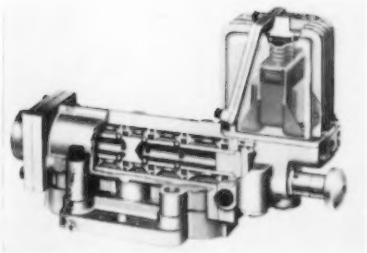
A new 200 h.p. self-contained boiler has been added to the CB line of the Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wisc. The product has full modulating burner, silent oil pump, davited rear and front doors which expedite tube removal and cleaning.

Quiet operation of the CB 200 is the result of a caseless fan that draws combustion air into a large plenum chamber. The greater area of the plenum chamber deadens noise appreciably.

Controls on the new CB 200 are designed for ease of operation and maintenance. Burners and accessories functions from light-off to shut down with complete safety.

The front and rear doors on the product are davited. Doors may be swung open after removing a few bolts at each end. Tube sheet and tubes are accessible for cleaning without removing heavy-duty refractory which is contained in the rear door. Doors are sealed with preformed asbestos gaskets. Combustion air passes through the front head and keeps the burner and control panel cool.

Totally enclosed control panel, located at operator level contains burner relay, blower motor starter and control switches. An assembly containing both the electric and steam preheater is encased in a single shell. All boilers are fiberglass insulated and then covered with 16 gauge metal lagging.



Valve Line Has Novel Features

An additional line of hydraulic B-type control valves, just introduced by C. B. Hunt & Son, Inc., Salem, Ohio, is said to offer valve features never before available to industry.

All valve chambers are formed by aluminum spacers held in metal-to-metal end abutment. This arrangement simplifies internal construction, and permits O-rings and U-packers to be supported on both the inside and outside diameters without placing any mechanical pressure on the packers. The design also allows easy servicing even under field conditions, and eliminates any need for valve inventories or returns to the factory for repairs.

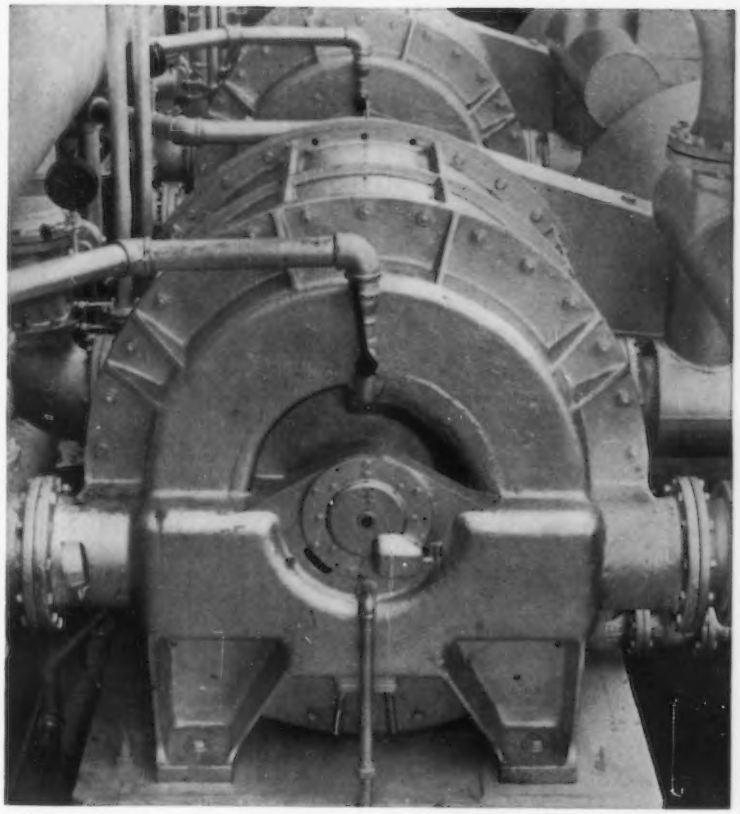
A hollow, radially ported, stainless steel, ground and polished plunger is the only moving part aside from the operating mechanism itself. Flow is from the inlet chamber through the radial ports of the hollow plunger and out through other ports in the plunger to the connected line. There is no direct impingement of flow across the packing, which greatly prolongs its life. Lapped joints, and metal-to-metal seating are eliminated. All parts are in pressure balance eliminating any tendency to creep or crawl.

The sub-base mounting furnished with all B-Type valves permits the piping to be connected to the sub-base so the valve can be removed for inspection or repair without pipe disconnection. Dual exhaust in four-way valves permits the speed of the operated piston to be controlled by installing adjustable exhaust plugs in the valve sub-base.

The solenoid operated units feature extremely high cycle operation. They are conservatively rated at 600 cycles per minute for continuous operation on air at pressures from 40 psi to 150 psi; and can be operated at much higher speeds for intermittent duty on air at 80 psi to 100 psi. Exterior feed type valves can be used in hydaulic service at pressures up to 250 psi using air for the pilot medium. Interior feed type valves can be used on oil from 40 to 150 psi at somewhat lower cycling speeds.

The bottom plate of the solenoid is positioned over steel dowel pins fitted with O rings, and is held in place with a spring. This provides a cushioned

High machine speeds?
High temperature headbox stock?
You need NASH Vacuum Pumps!



Air from the suction rolls on paper machines carries with it substantial quantities of moisture. This considerably reduces the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump, because of the unique principle of operation, the bulk of this vapor is effectively condensed inside the pump. The total capacity of a Nash is therefore increased.

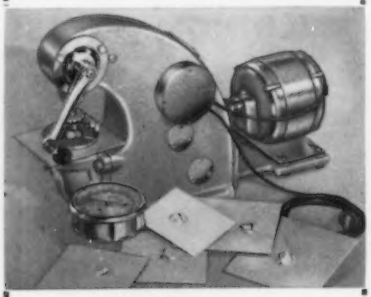
When you specify a Nash Pump it can be closely sized to the job. It is not necessary to select an over-sized unit, because the rated capacity of the Nash may be relied upon.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

441 WILSON ROAD, SO. NORWALK, CONN.

Cady
UNIFORM PRESSURE
Burst Strength Tester



For Papers or Boards

This instrument meets ASTM and TAPPI standards; also CCC Rule 41 (Cady or Mullen Test), with a record of more than 30 years service in the paper and board industry. Uniform pressure during 12 second cycle assures uniform test on papers or boards. Pressure registers in pounds per square inch on direct reading dial, and remains at reading until next test is stated. Write for complete brochure describing operation in detail.

Burst Testers • Micrometers
Basis Weight Scales

E. J. CADY & COMPANY
MANUFACTURERS
676 North Harlem Ave., River Forest, Illinois

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BALTIMORE
CHICAGO
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JERSEY CITY
KALAMAZOO
LOS ANGELES
PHILADELPHIA

always in the market

pioneer paper stock

company graders and packers of waste paper

shock resistant mounting which reduces destructive hammering and greatly increases solenoid life. The gasketed die-cast water-tight aluminum solenoid cover, is split for easy accessibility, finned for cooling and fitted with captive screws and retaining chain.

Recorder for Roll Speed Measurement

Variations in roll speeds in paper mills can now be recorded and indicated precisely with a Differential Voltage Recorder manufactured by General Electric, Schenectady 5, N. Y.

Two instruments are available for increased application versatility. One recorder has a scale and chart for direct reading of feet-per-minute *draw*, or, the stretch of paper. The other recorder measures and indicates the *ratio* between roll speeds.

A d.c. tachometer is geared to each of two rolls. Voltage difference of the two tachometers expresses any difference in roll speed. A simple adjustment of either tachometer circuit allows for difference in gearing and roll size. The recorders are unaffected by changes in operating speeds, recording only *draw* and *ratio* during speed-ups or slow-downs.

Use of plug-in amplifiers helps reduce down time and simplifies maintenance of the recorder.

Semiflush mounting dimensions for the differential voltage recorder are: 17 7/8 in. high, 15 3/16 in. wide, and 12 5/32 in. deep behind the panel.

Reducing Valve for Steam Duty

An air-loaded, diaphragmed operated, pressure reducing valve for steam heat and process steam applications is announced by Leslie Co., Lyndhurst, N. J. The units are Class GPK and have only two moving parts. These are a metal diaphragm with full valve travel and a hardened stainless steel main valve that seats on a renewable stellited seat ring.

An air loader replaces the regular loading spring, producing a constant loading force on the diaphragm. The product is designed to assure the same control point over full valve travel.

The valve is available in cast iron in sizes from ½ in. to 2 in., with screwed end connections. Inlet pressures range from 0 to 250 p.s.i., and up to 450 degrees F.

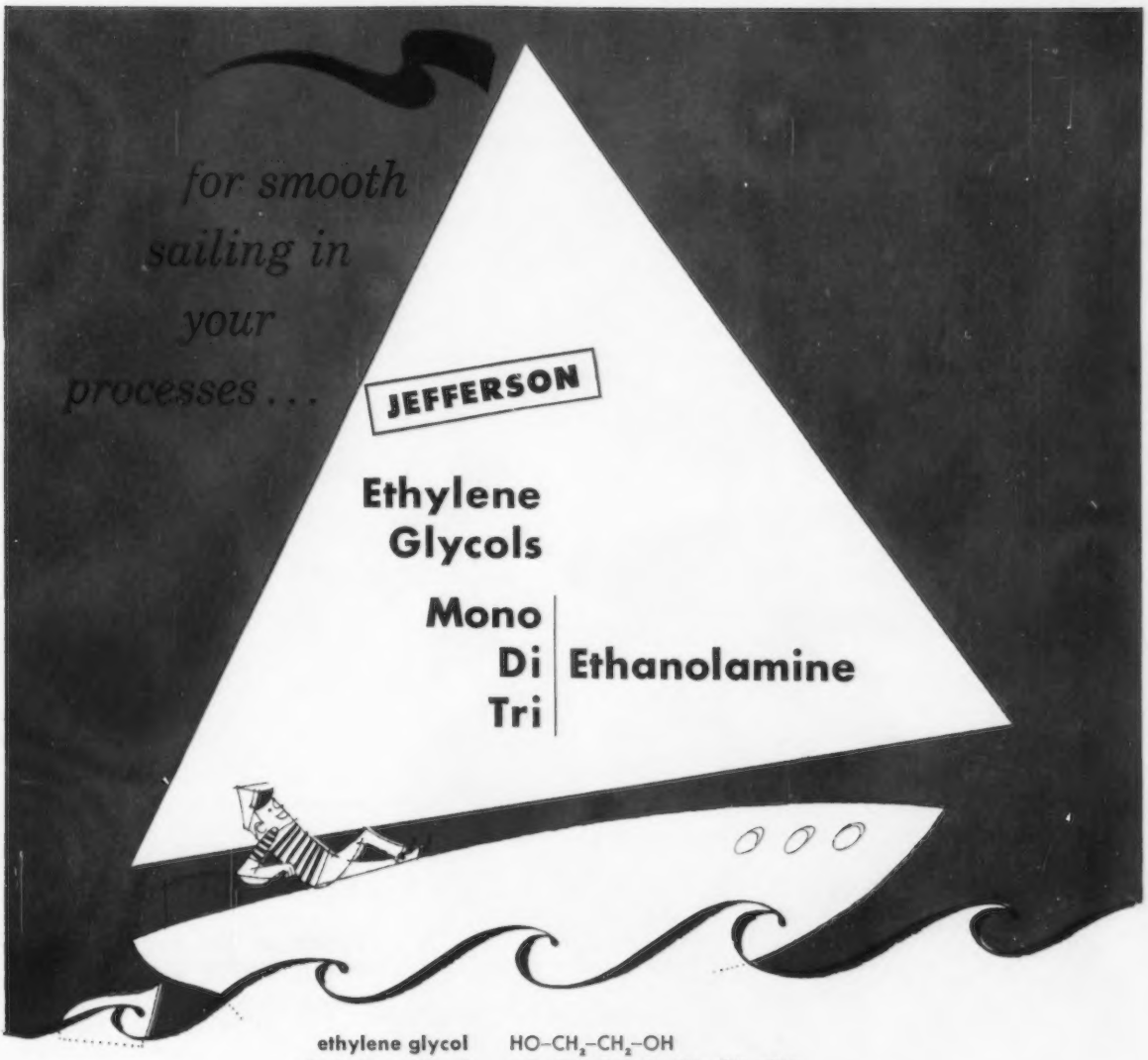
New Sizes for Gear Drive Line

An increase in available sizes of right-angle gear drives has been announced by U. S. Electrical Motors Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif. Sizes now range from 11 to 150 h.p.

The units are adaptable to any vertical turbine pump and are driven by gas, gasoline or diesel engines. The gear drive permits the pump shaft to be mounted integrally, assuring highest efficiency and precise adjustment of pump impellers.

A reverse protection clutch prevents damage to the pump and drive in the event of accidental engine reversal. Castings are heat treated to remove internal stresses and prevent distortion. Weather-proof construction protects all drives from dust and rain. Automatic oil circulation assures positive lubrication of all moving parts. Backstops are available to prevent back-spinning of pump shaft when engine is stopped or clutch is disengaged.

It will speed the reply to your inquiry to mention Paper Trade Journal.



ethylene glycol	$HO-CH_2-CH_2-OH$
diethylene glycol	$HO-CH_2-CH_2-O-CH_2-CH_2-OH$
triethylene glycol	$HO-CH_2-CH_2-O-CH_2-CH_2-O-CH_2-CH_2-OH$
monoethanolamine	$HO-CH_2-CH_2-NH_2$
diethanolamine	$HO-CH_2-CH_2 \diagdown \atop HO-CH_2-CH_2 \diagup NH$
triethanolamine	$HO-CH_2-CH_2 \diagdown \atop HO-CH_2-CH_2 - N \atop HO-CH_2-CH_2 \diagup$

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NEWS OF ASSOCIATIONS

S-C Session Planned for Alkaline Pulping Conference

The Tenth Alkaline Pulping Conference will be held at the Jung Hotel, New Orleans, La., November 14-16. John O. Parrott, Champion Paper & Fibre Co., Pasadena, Texas, is in charge of the technical program for the conference, and Vernon Woodside, Olin Mathieson Chemical Corp., New Orleans, La., is chairman of the local arrangements committee.

Four technical sessions are being planned, including one session on semichemical pulping, which will be sponsored by the Semichemical Pulping Committee. The program for the session is being planned by Junius Sapp, Gaylord Container Corp., Bogalusa, La.

The program will feature wood handling, procurement and evaluation methods. A partial list of the papers to be presented follows:

1. "Forest Genetics"—Bruce Zobel, The Texas Forest Service.
2. "Studies in Continuous Alkaline Pulping"—William J. Nolan, University of Florida.
3. "Pulpwood Evaluation Methods"—W. C. Chapman, Union Bag & Paper Corp.
4. "Continuous Automatic Control of Chlorine Addition in First Stage of Bleaching with Oxidation Potential"—George W. Seymour, Brunswick Pulp and Paper Co.
5. "Wood Handling and Barking"—C. R. Haynes, International Paper Co.

Discuss Hardwood Utilization

Use of Michigan hardwoods was discussed at a two-day conference by the Forest Products Research society's Great Lakes section at Manistee, Mich. Nearly 100 men from the upper midwest were in attendance to hear talks on reforestation and conservation of Michigan hardwoods.

Delegates toured the American Boxboard Co. pulp and paper mill. Gordon B. Bonfield, vice president of American Boxboard spoke on conserving Michigan hardwood trees. Kenneth Mall, plant manager of American Boxboard, at Grand Rapids, Mich., discussed the use of Michigan hardwoods in manufacture of packaging materials.

Program Set for Maine N. H. TAPPI Meeting

When the Maine-New Hampshire Section of TAPPI meets at the Poland Springs House, Poland Spring, Maine, members will attend the following technical program:

2 PM—Fri.—June 29, Chairman R. J. Martin; General Subject: Pitch & Chemical Slim Control.

"Non Biological Deposits in Paper Mill Systems" by Dr. L. L. Bott, National Aluminated Corp.

"A Study of the Deposition on Copper from Colloidal Suspensions of Fractions derived from Sulfite Pitch" by Dr. D. L. Vincent, Maritime Regional Laboratory, National Council of Canada.

"Fundamental Aspects of Foam" by Dr. F. J. Boylan, Hercules Powder Co.

"Pitch and Pitch Control" J. W. Swanson; The Institute of Paper Chemistry.

Saturday A. M. June 30, Chairman Dr. P. M. Goodloe, Panel discussion—with four speakers from Friday program plus T. G. Mangan, International Paper Co.; Harold Corbin, Socony Mobil Oil Co.; J. F. Thurlow; Onyx Oil & Chemical Co.

Banquet and dance will be held Friday evening.

What a difference COLOR makes!

Wouldn't it be nice if colored napkins could get the kids to clean their plates! We can't go *that* far, but we do know this — colored napkins (and many other paper products) are becoming more and more popular.

Our technical staff has the know-how to help you keep pace with this trend to color. If you want exactly the right shade . . . or maybe a distinctive new one . . . the most economical combination of dyes . . . please call on us. We'll be glad to help. Then watch your paper products move off the shelves! Write E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Dyes and Chemicals Div., Wilmington 98, Delaware.

Color sells more . . . for your customers and you

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REG. U.S. PAT. OFF.

Du Pont Dyes

NEWS OF SUPPLIERS

• WARREN STEAM PUMP CO. has appointed Charles F. Dexter to its Boston office as sales engineer. He was graduated from University of Maine with a B.S. degree in mechanical engineering and was previously associated with Cochrane Steam Specialty Co.

• J. E. SIRRINE CO. has elected D. G. Moon, who has been acting as consultant and head of the Pulp and Paper Department, a vice-president. Mr. Moon will continue in his present capacity as head of the Pulp & Paper Department.

AT DEDICATION OF NEW LOCKPORT FELT MILL—These were the principal speakers at the recent dedication of Lockport Felt Company's new Starkville, Miss., mill: (L to R) Mississippi's Governor James P. Coleman; Lockport Felt President Raymond J. Lee; former Governor Hugh White, and Robert B. White, production manager of Sonoco Products Co., Hartsville, S. C., and chairman of the Southeastern division of the Superintendent's Association.

PURE NICKEL PROTECTION
against corrosion/contamination
AT 1/6 THE COST
the structural strength
of seamless steel
plus
the protection of
pure nickel
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nickel-plated seamless steel
PIPE and FITTINGS
The electroplated nickel surface is ductile, adherent and porefree and will provide exceptional corrosion and contamination protection conveying phenol, chlorinated organics, hot caustic liquors, caustic sodas, alcohols, glycerine, natural gas, caustic potash, formaldehyde, etc. Pipe sizes: 1½" to 24" diameter in 20-foot random lengths. Fabricated as easily as low-carbon steel.
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Distributed by COLORADO FUEL & IRON

James Ferrara

• STOWE-WOODWARD INC. has transferred Sales Engineer James Ferrara to Ohio to represent Stowe-Woodward in Ohio, Illinois, and Indiana. Backed by 10 years of varied experience at Stowe-Woodward's home plant in Newton, Mass., Mr. Ferrara is well versed in the manufacturing as well as the practical application of Stowe-Woodward rubber covered rolls in papermaking and textile finishing. Jim assumes his new duties on June 1st.

• F. C. HUYCK & SONS will open its new, fully integrated plant this month. It provides 200,000 sq. ft. of floor space for the manufacture of Huyck and industrial fabrics. It is located in Aliceville, Ala., heart of the South's fast-growing paper industry. The expansion project represents a total investment of four million dollars and will supplement Huyck's other manufacturing facilities in Rensselaer, N. Y.; Arnprior, Ontario; Peterborough, N. H., and Cavendish, Vt.

• E. F. HOUGHTON & CO., 303 W. Lehigh Ave., Philadelphia, oil, chemical and packing manufacturer, has appointed Anthony J. Wirpsa manager, Paper Sales Dept.

H. D. MacDonald

• DRAPER BROTHERS CO. has appointed Hubert D. MacDonald as sales representative in Michigan, Minnesota, Wisconsin territory, under the supervision of L. H. Breyfogle.

Borden's
LEMOL®
POLYVINYL ALCOHOLS
Borden's Chemical Division offers industry a wide variety of polyvinyl alcohols. They can be used as emulsifiers and stabilizers . . . in adhesives . . . for paper coatings and saturants . . . for textile sizings and finishes . . . for binders . . . and for films, fibers and molded products. The various grades of LEMOLS enable the compounder to develop these properties:
Flexibility • Controlled viscosity • Non-jelling • Adhesion to wide variety of surfaces • Light stability • Grease-proofness • Gas-proofness • Protective colloidal action • High pigment binding power • Controlled hot and cold water solubility.
NOW AVAILABLE IN EVEN LARGER COMMERCIAL QUANTITIES
For further information and samples of either LEMOL Polyvinyl Alcohols or LEMAC Polyvinyl Acetates, write The Borden Company, Chemical Division, Polyco-Monomer Dept. PTJ-66, 350 Madison Ave., New York 17, N. Y.
Borden's
LEMAC®
POLYVINYL ACETATE BEADS
Borden's LEMAC'S are immediately available in these viscosity grades:
Low: 7, 15, 25;
Middle: 40, 150;
High: 1000
They are ideally used for:
Low cost thickeners for inks, paints, lacquers, hot-melt coatings • Exceptional light stability, strength and water resistant coatings and adhesives • Metallic inks for use on cellophane, glassine, foil, and plastics • Clear, flexible, high-gloss coatings for decoration and heat sealing.

Borden is also your headquarters for:

- All types of Vinyl Acetate Homo-and-Copolymer Emulsions
- Polyvinyl Acetate Solutions
- Sodium and Potassium Polyacrylates
- Butadiene-Styrene Latices

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THE Borden COMPANY

CHEMICAL DIVISION

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In Canada: Polyresins, Ltd., 184 Laird Drive, Toronto 17 (Leaside), Ontario

F. J. Edwards

J. J. Heavey, Jr.

• TRACERLAB, INC., Boston, Mass., has appointed John J. Heavey, Jr., Instrument Division sales representative in the New England area.

Mr. Heavey was formerly with the Brown Instrument Division.

• AMERICAN CYANAMID CO. has named Frederick J. Edwards assistant advertising and sales promotion manager of its Industrial Chemicals Division. Mr. Edwards will also serve as advertising manager of the Division's Paper Chemicals Department and the Refinery Chemicals Department.

He was formerly a staff executive of the American Assn. of Advertising Agencies.

Figures of the Week

PAPER PRODUCTION RATIO REPORT —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Apr. 28	May 5	May 12	May 19	May 26
1956	103.1	101.9	102.6	100.1r	101.1
	Apr. 30	May 7	May 14	May 21	May 26
1955	99.5	98.6	99.6	99.4	99.6

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	93.6	96.6	97.9	98.0	99.3	97.4	85.5	96.2	93.8	101.2	100.6	94.0	94.9
1956	98.9‡	101.5‡	102.6‡	102.3‡									

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1949	1950	1951	1952	1953	1954	1955	1956
Year to Date	84.2	95.5	101.7	94.5	94.3	93.8	95.8	101.4
Year Average	83.7	95.8	98.0	88.6	92.3	91.6	94.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

	Apr. 28	May 5	May 12	May 19	May 26
1956	99	99	99	97	99
	Apr. 30	May 7	May 14	May 21	May 28
1955	96	97	97	97	98

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	92	95	96	94	97	97	84	99	97	102	101	92	96
1956	100	100	99	100									

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING May 26, 1956	LAST WEEK ENDING May 19, 1956	CUMULATIVE TO DATE Jan. 1, 1956 to May 26, 1956
% Activity	99%	97%	99%
	Tons	*Tons*	*Tons*
Total Production	285,603	285,921	5,964,231
Liner	94,329	102,344	2,013,661
Corrugating Material	42,555	45,314	939,934
Chip & Filler Board	6,789	5,994	129,749
Total Containerboard	143,673	153,652	3,083,344
Folding	51,779	50,595	1,084,898
Set-Up	12,229	13,819	273,038
Special Food Board	25,714	23,807	494,004
Other	52,208	44,048	1,028,947
Total Boxboard	141,930	132,269	2,880,887
Total Orders	*Tons*	*Tons*	
Received	239,176	239,754	
Unfilled At End of Week	490,043	536,619	

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Complete Service for PULP and PAPER MILLS including all auxiliaries and byproducts.

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YOUR GUARANTEE CASH MARKET

FOR SURPLUS MACHINERY

WITH IMMEDIATE REMOVAL FROM YOUR MILL

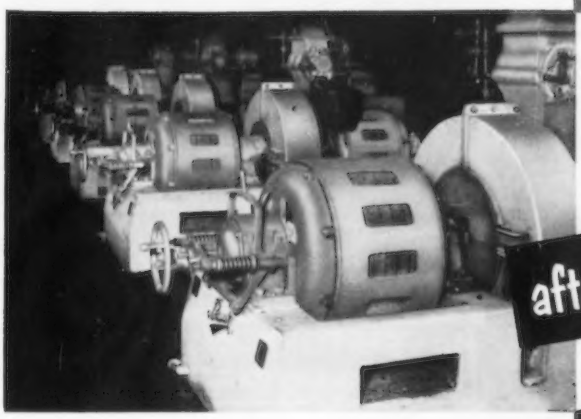
Ross Paper Machinery Company

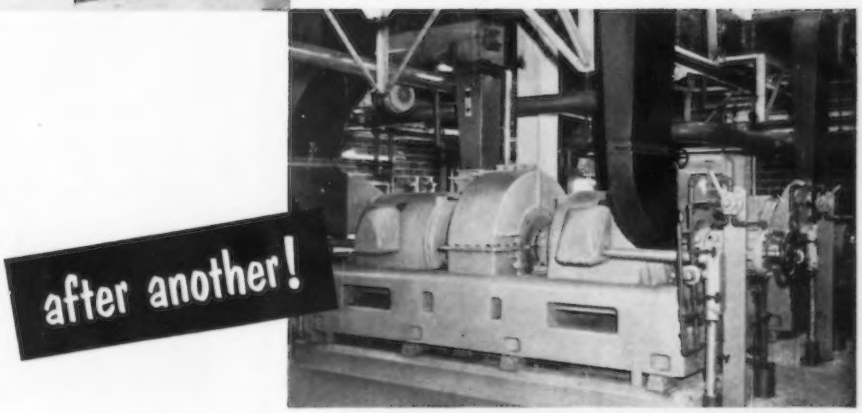
265 Passaic Street, Newark 4, New Jersey Tel. HUmboldt 2-2177

• STANLEY WORKS, New Britain, Conn., will break ground probably in June, for a manufacturing plant designed to double the company's production of steel strapping. Adjoining it on a different level will be an office building. Both will be of brick, glass and steel, one story high.

Steel strapping production activities, which are now scattered among half a dozen buildings, will be concentrated in the new plant, as will the manufacture of steel strapping tools. In conjunction with this, The Stanley Works also will expand its steel manufacturing operation in New Britain, to provide the essential materials for the additional volume of steel strapping.

The Rapid Trend Toward
Bauer Double-Disc Refiners for Semi-Chemical Pulp





To get the best job of fiberization, high speed is right. And a Bauer Double Revolving Disc Refiner has it—2400 differential rpm between the rotating heads. Bauer double-disc refiners have no stationary plate to cut fibers. A Bauer will produce high quality semi-chemical pulp with less chop, better testing qualities, and better formation on the machine.

We're not prejudiced toward double-disc either, because we make the best and most modern pressure and free discharge single-disc mills offered to the industry.

Write, wire, or phone us for more detailed information

Bauer

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DISC REFINER HEADQUARTERS

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Westvaco Quality Papers

Westvaco manufactures a wide range of high quality paper products — from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality — Westvaco's guarantee of top performance.

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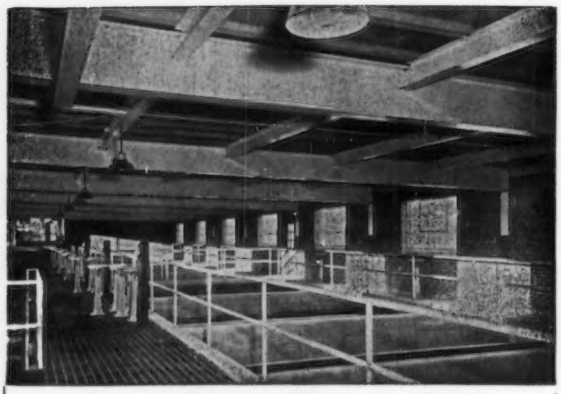

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Demineralizing Plants
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All other types of water treating systems, including strainer valves, air wash systems, filter sand and anthracite beds and all filter repair and replacement parts. Over 50 years experience building new and modernizing old water treatment plants.

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CLAYTON 4, NEW JERSEY

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CORES CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

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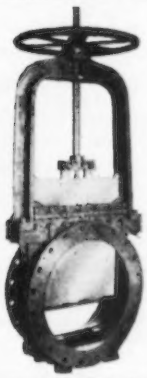


RECORD PAPER & PULP STOCK VALVES "BONNETLESS" SELF CLEARING---"RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- **The "FAST THREADED" screw stem and ball bearing speeds valve operation.**
- **The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.**
- **The yoke mountings are such that yokes for various methods of gate operation are interchangeable.**
- **Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.**

"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS"

RECORD FOUNDRY & MACHINE COMPANY

LIVERMORE FALLS, MAINE, U. S. A.

Get in on the Fast-growing S. O. S. Carry-All bag market

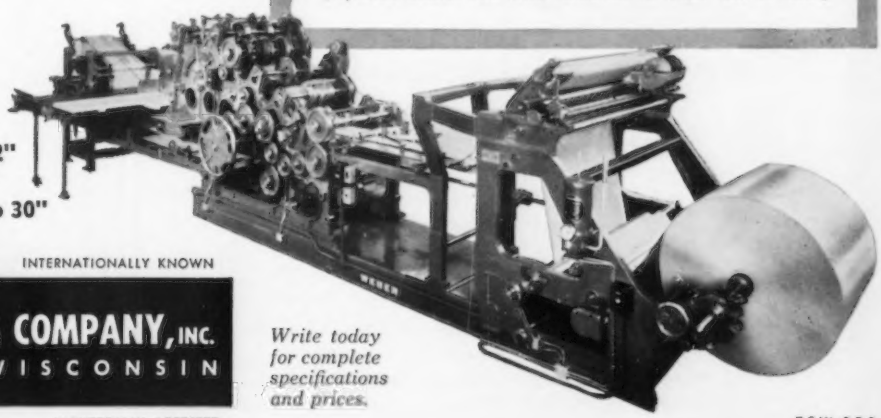
The vast supermarket field *prefers* modern, easy opening, square bottom S.O.S. Carry-All bags.

And you'll produce them better, faster and more economically with the famous WEBER 7-GW machine. It's the most versatile, dependable high production machine available today.

WITH A

WEBER 7-GW BAG MACHINE

(Optional models with seam formation on either side of tube.)



Bag widths 7¾" to 12"
Bag bottoms 5" to 7"
Tube lengths 14½" to 30"

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Write today for complete specifications and prices.

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"EXCELSIOR" FELTS

The Trademark of Felts of Superior Quality for Every Grade of Pulp and Paper

EXCELSIOR KNOX Woolen Co. Camden Me. FELTS & JACKETS

KNOX WOOLEN COMPANY
CAMDEN, MAINE

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We will welcome an opportunity to be of service, if you are available for a position in paper or pulp manufacturing or paper converting. SEND US YOUR RESUME. Many attractive positions at excellent salaries are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

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J-11

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Converting—Finishing Superintendent for Mid-West paper mill. Please submit complete history of education, experience and salary expected with first letter. Reply to Box 56-177, Paper Trade Journal.
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A personalized Placement Service for "Paper Men" by paper men. Administrative, Technical, Production and Sales positions in the pulp, paper and converting fields. Foreign Connections. Confidential
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OR

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WE NEED AN INDIVIDUAL WITH:

1. Sound technical training—B.S. or M.S. degree.
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3. Up to 5 years industrial experience preferred.
4. Interest in product or process development.

WE OFFER:

1. Opportunity for creative imaginative worker to bring paper pulp into new fields.
2. Diversified work in guiding developments through laboratory, consumer evaluation and plant.
3. Permanent position on central research staff of leading surgical dressing manufacturer.
4. Modern working facilities, liberal employee benefits, company sponsored educational opportunities.

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1—52" Wide 4 Color Manton Oil Ink Press.
1—42" 4-color Kidder Std Anilliner
1—40" 4-color Hudson-Sharp Flexographic, with Variable Sheeter.
1—4-color 24" x 40" Meisel Adjustable Rotary
1—36" 2-color Manhassett. Roll to Roll with Slitting Attachment.
1—30" 4-color Paper Converting Machine Co.'s Roll to Roll Oil Ink Press.
1—26" 3-color Potdevin Flexo Tailprinter
1—22" 2-color Potdevin Roll to Roll Flexographic Tailprinter.
1—20" Wolverine Flexographic Cub Printer, roll to roll, practically new.
3—15" 1-color roll to roll Flexographic presses
3—Chambon oil ink presses 1—13" 4-color, 1—18" & 1—28" 3-color

POWER PAPER CUTTERS

19—Seybolds 1—56" Precision; 56" 12Z; 40", 44", 50", 57", 64", 74" 10Z; 50", 56", 64", 84" Daytons; 44" & 74" 20th Century; 34", 44" & 75" Holyokes; 36" 2Y; 3 Oswegos, 44", 57" & 68"; 3 Sheridans, 36", 40" & 65"; 1 3VA Seybold 3 Knife Trimmer

CAMACHINES

1—62" Type 40 1AF
1—62" Type 26-7AM
1—52" Type 10-6
1—50" Type 6
1—42" Type 9-5-A
1—42" & 62" Type 6
1—42" Type 10-5A, 30" rewind
1—42" & 1—52" Type 24-2A
1—42" Type 40-50 (Roll Doctor)
1—40" Type 40

OTHER SLITTERS

1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—62" Johnston model 12 score cut—VS drive
1—60" Langston Type "B" 50" rewind
1—48" Langston Duplex Rewind
1—48" Inman.
1—40" Type "A" Langston Shear-Cut
1—40" Model B Fales, Shear-Cut
1—36" Kidder SL Model.
1—30" Beck Razor Blade Slitter
1—40" Kidder SH Model—40" rewind.

MISCELLANEOUS MACHINES

1—70" Waldron Gumming Machine with ovens and AC motor drive.
1—40" Gumming machine, complete.
1—Roto Bag Machine Model "C" with electric eye
1—Complete ½ bbl. Coty Tuber
1—Model 111C Potdevin F & S cellophane bag machine
1—Dietz Interfolding Towel Machine
1—40" Waldron Knife Coater.
1—30" Hudson Sharp Waxing Machine. Type AW2
1—52" Waxer & Laminator
1—64" Sheet Paraffining Machine
1—72" Mayer Equalizer Type Waxing & Laminating Machine
1—75" Potdevin Type Squeeze Roll Waxing Machine
1—18" & 1—24" Schultz Automatic Roll Machine
4—Die Presses 1—50" x 22" & 1—44" x 22" Sheridan, 1—38" x 24" Type UA—2—17" x 42" Seybolds.
4—Waldron Embossers, 1—27", 1—32" 1—46" heavy duty
1—2 oz & 1—½# to 1# Cellophane Bag Machines
2—Paper Converting Machine Co.'s ¼ Fold Napkin Machines, 1—2 web.
1—Hudson-Sharp 13½" x 13½" ¼-Fold Napkin Machine
2—81" latest type Paper Converters facial toilet converters
2—Model "A" Junior Lawtomatic Toilet Roll Wrapping Machines
1—48", 55", 67" and 100" Hamblet Single Rotary Sheeters with backstands and layboys.
1—90" Moore & White Single Rotary Sheeter with backstands
1—36" Beck Sheeter handles cellophane or paper
1—48" Hudson Sharp Embosser-tinter

PAPER AND PULP MILL MACHINES

1—60" Holyoke 10 Roll Stack of Super Calenders.
3—Nash Vacuum Pumps, L-5, L-6 and L-7
5—3 Packet Grinder Stones, 26" & 27"x54"
1—Sutherland Right Hand 42" Disc Refiner

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BARKING DRUM
1—10′ x 30′.

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs, with motors.
Write us regarding your requirements.

BREAKER STACK
1—110″ face 2 roll breaker stack, with frames.

CALENDER STACKS
1—3 roll 30″ face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—3 roll 84″ calender stack.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 Roll 56″ (Heavy Duty)
1—5 Roll 90″.

CHIPPERS
1—96″ Murray 6 knife chipper, complete with 300 H.P. synchronous motor.
1—96″ Murray 4 knife Chipper—anti-friction bearings.
24—Chipper Knives 15⅞ x 8¾, 2 slot.

CLASSIFINER
1—Dilts Classifiner, practically new with motor.

CORE MACHIINE
1—M. D. Knowlton tube winder, 94″ face.

CREPER AND WAXER
1—80″ Creper and Waxer, excellent condition, details on request.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
2—36″ diameter x 86″ face, with vats.

CYLINDER MOLDS
2—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
2—36″ diameter x 54″ face.
1—36″ diameter x 84″ face.
2—36″ diameter x 86″ face, with vats.
2—36″ diameter x 110″ face.
3—36″ diameter x 90″ face, 18″ diameter couch rolls.

DIGESTERS
2—14′ Globe Rotary Digesters.

DRIVES
1—Sandy Hill right angle 50 H.P. (4.75 to 1)
1—Farrel Birmingham enclosed drives, 200 H. P. anti friction bearings, 5.45 to 1, new equipment.
1—Jones 21 H. P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive.
1—Vaughn 100 H.P. enclosed angle drive. Ratio 7 to 1.
1—#4 Reeves Drive totally enclosed Class E with 25 HP splash proof motor.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 h.p.).

DRYERS
5—24″ diameter x 54″ face, with bearings.
5—28″ diameter x 80″ face with anti-friction bearings.
4—36″ diameter x 115″ face, with gears & bearings.
6—36″ diameter x 44″ face with frames gears & bearings.
1—36″ diameter x 66″ face.
1—36″ diameter x 67″ face.
15—36″ diameter x 72″ face.
6—36″ diameter x 76″ face.
2—Dryers 36″ diameter x 84″ face, with bearings gears & frames.
2—36″ diameter x 80″ face.
1—Dryer 48″ diameter x 134″ face.
1—48″ diameter x 144″ face.
4—48″ diameter x 50″ face, gears & bearings.
12—Bagley & Sewall, 48″ diameter x 127″ face, with gears and bearings.
5—60″ diameter x 80″ face, complete.

DYNOFINER
"Rice Barton," details on request.

EMBOSSING CALENDERS
1—43″ 3-Roll Embossing Calender.
1—45″ Meadows 2 roll embosser.
Write us regarding your requirements.

EXTRACTOR ROLLS
1—Extractor roll, 26″ diameter x 104″ face, with rubber couch roll.
1—Rice Barton & Fales Extractor Roll, 26″ diameter x 104″ face, with rubber couch roll.

FELT CONDITIONER
1—160″ Vickery, complete.

FILTER
1—Oliver Filter, cylinder mold 64″ diameter x 120″ face, brand new all steel vat.

FLAT SCREENS
1—14 plate Packer, roller shoes.

GEARS
Write us regarding your requirements.

GRINDERS
2—4 pocket Grinders.
2—3 pocket Grinders.

JORDANS
1—#4 Emerson Jordan, anti-friction bearing.

LABORATORY EQUIPMENT
1—Ball Mill.
1—Electrical Oven (Williams Standard Pulp Testing Apparatus).
1—Cylinder Mold, 11″ face x 28″ diameter,—anti friction bearings.
Write us regarding your requirements.

LAMINATING MACHINES
1—72″ Hudson-Sharp laminating machine, reverse coater.
2—26″ Polyethylene laminators.
2—84″ Asphalt laminators.
1—72″ Beloit Laminator, complete with drive.

MOTORS
1—50 H.P. Upright motors, air cooled 3/60/440, 1150 R.P.M. (Ball Bearing).
Write us regarding your requirements.

PRESSES
Write us regarding your requirements.

PRESS ROLLS
1—Chilled iron, chrome plated, 12″ x 100″
1—Chilled iron, chrome plated, 10″ x 74″

PULLEYS
Various cone and assorted pulleys.

PULPERS
1—Jones Pulper.

PUMPS
1—Shartle Bros. high density pump, 2000 g.p.m., 62 ft. head.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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Write us regarding your requirements.

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—123″—3 bowl revolving reel.
1—134″—2 drum.
1—72″ Downingtown Reel, 2 bowl.

REFINERS
1—12″ Wiener Refiner.
1—#185-C-36″ Bauer Refiner, reconditioned, as good as new.

ROLLS
1—Rubber Couch Roll—20″ diameter x 108″ face.
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.).

ROTARY SCREENS
1—#1A Bird, copper vat.
Write us regarding your requirements.

SAVEALLS
2—Sandy Hill, 36″ diameter x 86″ face cylinder molds, anti-friction bearings and couch rolls.

SCREEN PLATES
Bird Rotary screen plates.
Plates (new) for flat screens.
Write us regarding your requirements.

SHEETERS
1—85″ Hamblet Sheeter (duplex) layboy, 11 rollback stand.
1—140″ Hamblet (Simplex).
1—140″ Hamblet (Duplex).

SHOWERS
Write us regarding your requirements.

SHREDDER
1—Mitts & Merrill air-fluff excelsior paper shredder, with motor. Excellent condition.

SLITTERS & WINDERS
1—42″ Cameron type 24-3A.
1—42″ Cameron—Type 9.
1—42″ Cameron—Type 6.
1—50″ Cameron—Type 6.
2—52″ Cameron—Type 10.
2—62″ Cameron—Type 6.
1—72″ Cameron—Type 10.
1—82″ Cameron Type 12.
1—84″ Cameron Type 10.
1—152″ Cameron—Type 18.
1—172″ Cameron (Shear) Type 19.
1—40″ Fales Slitter.
2—60″ Kidder.
1—40″ Langston.
1—120″ Moore & White, 4 drum winder.
2—86″ Two Drum Moore & White, 50″ diameter rewind.

SLITTING DEVICE
84″—Quick change slitting device shear cut, complete, practically new.

STEAM JOINTS
18—3″ Johnson steam joints (new).

STOCK PUMPS
1—8 x 18 Shartle Triplex.
2—10 x 10 Beloit Duplex, low type.
2—10 x 20 Shartle Triplex.
1—12 x 20 Shartle Triplex.
Advise as to your requirements.

SUCTION BOXES
Write us concerning your requirements.

SUCTION COUCH SHELL
1—Downingtown suction couch shell only, 127½″ face x 26″ diameter.

SUCTION COUCH ROLLS
1—36″ diameter x 246″ face, SKF bearings.
1—Downingtown suction couch roll, complete (new) 127½″ face x 26″ diameter.
1—Sandusky Suction Couch Roll 18″ diameter x 98″ face.

SUCTION FELT ROLL
1—Gilbert & Nash 122″ face.

SUCTION PRESS ROLLS
1—Sandusky Suction Press Roll 130″ drilled face x 14⅞″ diameter.

SUPERCALENDER STACKS
1—10 Roll 60″ Holyoke.

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face. Write us regarding your requirements.

THICKENERS
1—Pusey & Jones, 42″ diameter x 146″ face cylinder mold, with 18″ diameter couch roll.
Write us regarding your requirements.

TOILET WINDERS
2—72″ Hudson-Sharp (Surface type winder).

TRIMMERS
1—64″ Seybold.
1—63″ Oswego cutter.
1—60″ Guillotine cutter.
1—50″ Oswego.

VACUUM PUMPS
2—L-6 Nash vacuum pumps.
2—L-5 Nash vacuum pumps.
2—L-4 Nash vacuum pumps.
2—#1 Nash Hytor vacuum pumps.
1—#2 Nash Hytor vacuum pump.
1—#4 Nash Hytor vacuum pump.

VALVES
8—10″ 3 way DeZurik Dump Valves.
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VATS
2—D. J. Murray Company Vats, iron ends, for 42″ x 120″ cylinder molds, overflow and counterflow.

WET MACHINE
1—72″ Wet Machine.

YANKEE DRYERS
1—84″ diameter x 56″ face.
2—108″ diameter x 72″ face.

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Wanted for 800 ton Kraft Pulp Mill in paperboard plant. Must be competent and experienced. Salary open. This position is with a large company and is a real opportunity for a capable person. Address 56-170 care Paper Trade Journal.

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Excellent opportunity for permanent positions with a top firm which is rapidly expanding in the progressive pulp and paper industry. Location in mountain area of western Virginia.

DESIGN ENGINEERS — M.E., C.E., or equivalent education with three or more years experience, not necessarily paper mill, for piping, structural, plant layout, and design.

DRAFTSMEN — College degree not required but must have at least three years experience, not necessarily paper mill.

Complete resume including education, experience, present salary, and late photograph if available should be sent to:

Harold E. Miller, Technical Director
West Virginia Pulp and Paper Co.
Covington, Virginia

J-18

WANTED:—Superintendent

To take complete responsibility of waxing operation. Must be familiar with both wet and dry waxing, and be able to direct work. Plant located in New York State. machine improvement and development Excellent opportunity for a man with the proper background. Address Box 56-173 care Paper Trade Journal. J-11

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Who would qualify by education or experience for a position in product development in the tissue field. Chicago or eastern Wisconsin location. Send complete resume to:

Steiner Paper Mills
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PLANT ENGINEER

Experienced paper mill engineer to take charge of mill maintenance, power plant, and all engineering services in Specialty Board Mill located in Midwest. Successful applicant will be a part of top management in an aggressive organization. Please send resume of education and experience with first letter to Box 56-165 care Paper Trade Journal. TF

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MECHANICAL ENGINEER — Experienced in the design of paper converting or packaging machinery. Salary open. Write giving full résumé. Potdevin Machine Co., 200 North St., Teterboro, New Jersey. Attention of Mr. Arnold J. Smith. J-25

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Chemical Engineer with 7 years experience in the Paper Industry seeking a position preferably on development work of coated papers.

Previous experience consists of investigational work and quality control supervision in paper mill; also, quality control, supervision, and development work on asphalt and plastic coated papers. Familiar with production, testing and sales.

Box 56-139 Care Paper Trade Journal

J-11

Mill Executive—Industrial Engineer

More than twenty years experience in fine and specialty papers. Practical background of technical control work, production line supervision and general mill management. Ability in setting up and administering production planning, cost control and inventory control systems, product development and quality control. Address Box 56-169 care Paper Trade Journal. J-11

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AGE 41 MARRIED EXPERIENCED PAPER SALESMAN DESIRES TO REPRESENT FINE PAPER MANUFACTURER IN THE WEST. RESIDENCE SAN FRANCISCO BAY AREA

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LOS ALTOS, CALIFORNIA

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LAMINATING SUPERINTENDENT have been engaged in the laminating work for the past fifteen years. Laminating Glassine Greaseproof, Checkbook Covers foils and other Specialties. Have designed and had installed Laminating machine. Best of reference. Address Box 56-190 care Paper Trade Journal. J-25

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WORKS MANAGER—Production Executive; paper, board and conversion; seeks challenging opportunity in organization needing man exceptionally capable in organization; manufacturing; and labor relations. Employed. Diversified lines. Address Box 56-109 care Paper Trade Journal. J-25

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ASPHALT ROOFING SUPERINTENDENT desires job with asphalt roofing manufacturer. 31 years old, married and thoroughly experienced. Address Box 56-182 care Paper Trade Journal. J-11

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FOR SALE

One 3A Bird screen with .014 cut plates. Screen and plates in excellent condition.

Peninsular Paper Company
Ypsilanti, Michigan J-11

For Sale

PARTS FOR 156" FOURDRINIER PAPER MACHINE

1—New Valley Iron Works 156" monel lined head box and slice.

13—Stainless Steel Table Rolls 5" x 153" face, anti friction bearings.

5—Aluminum Suction Boxes.

1—Sandusky Suction Couch, 28" diameter x 162" face, Trunnion roller bearings.

43—Pusey & Jones 160" face x 48" diameter Dryers, 50 lb. steam pressure, 2 deck frames, gears and bearings available. Complete with felt rolls.

6—Pusey & Jones 160" face x 36" diameter Felt Dryers.

1—Farrel 7 roll, 150" calender stack. Motor operated loading device.

1—Pusey & Jones 162" English Pope Reel.

1—Cameron 160" Model 18 Slitter & Rewinder.

Complete electric paper machine drives available.

Immediate delivery on entirety or any item.

Complete stock preparation machinery also available.

ROSS PAPER MACHINERY COMPANY
265 Passaic Street, Newark 4, N. J.
Tel. HUmboldt 2-2177

TF

FOR SALE

50" Hamblet Sheeter with Maxson Layboy and Counter
72" Hamblet Sheeter with Layboy and Backstand
96" Moore & White Sheeter with Layboy and 8-roll Backstand
36" Waldron 2-drum rewinder
42" Cameron Type 24-3A
48" Kidder Slitter, two rewind shafts
30" Hobbs Slitter
60" Moore & White Layboy
44" Chandler & Price Automatic Clamp Power Cutter
20 New Fast Flexible Couplings for 2, 2½ & 3½" shafts.

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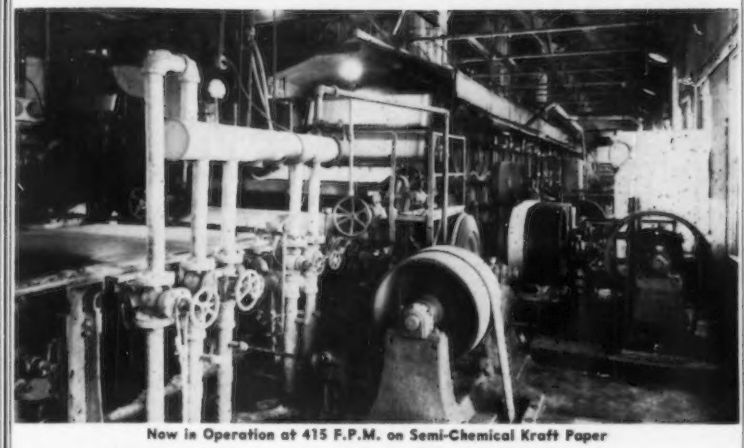

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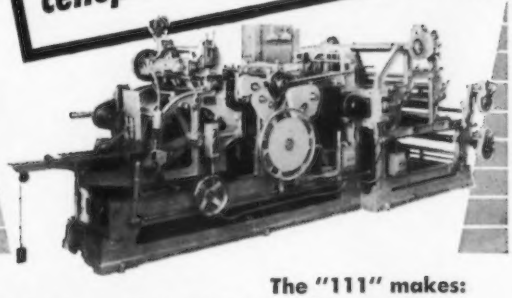

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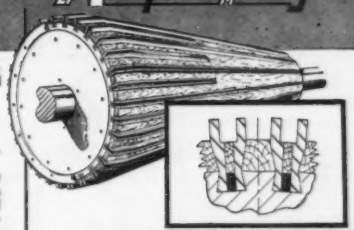

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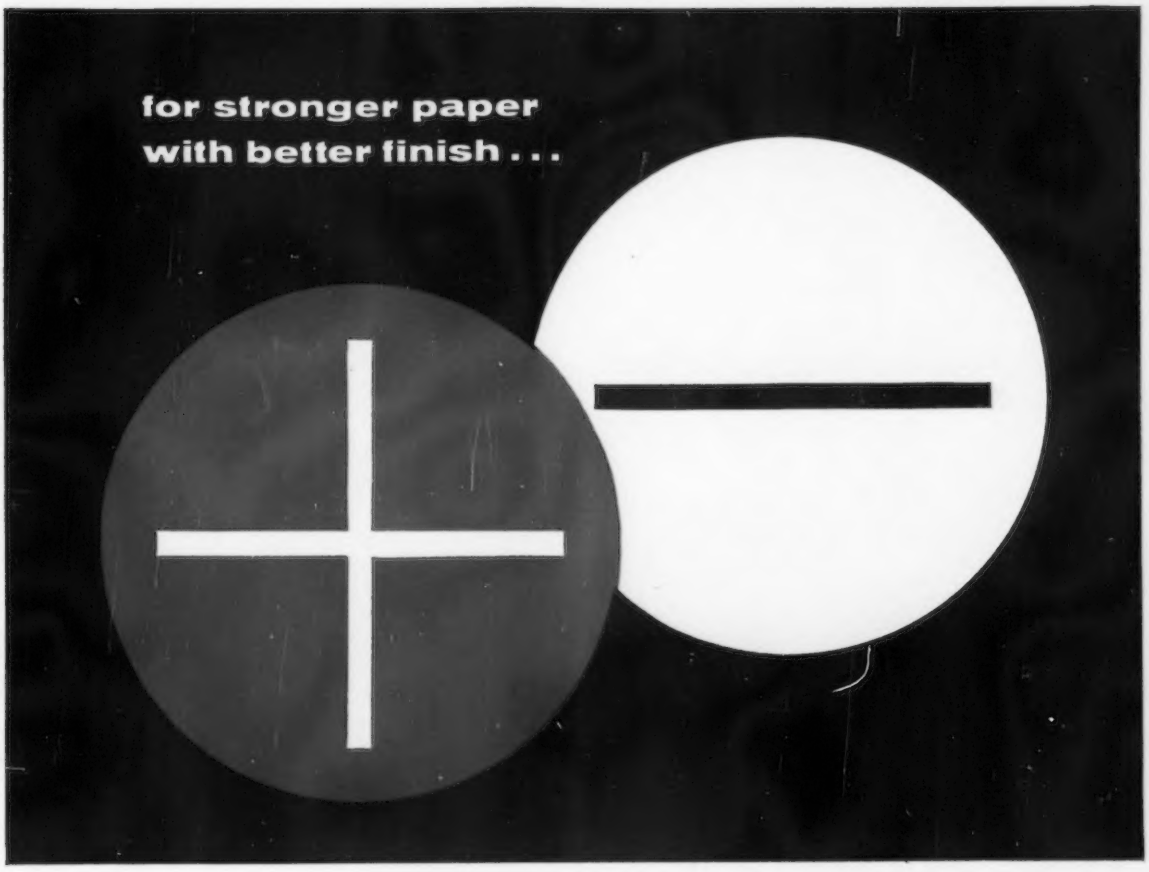

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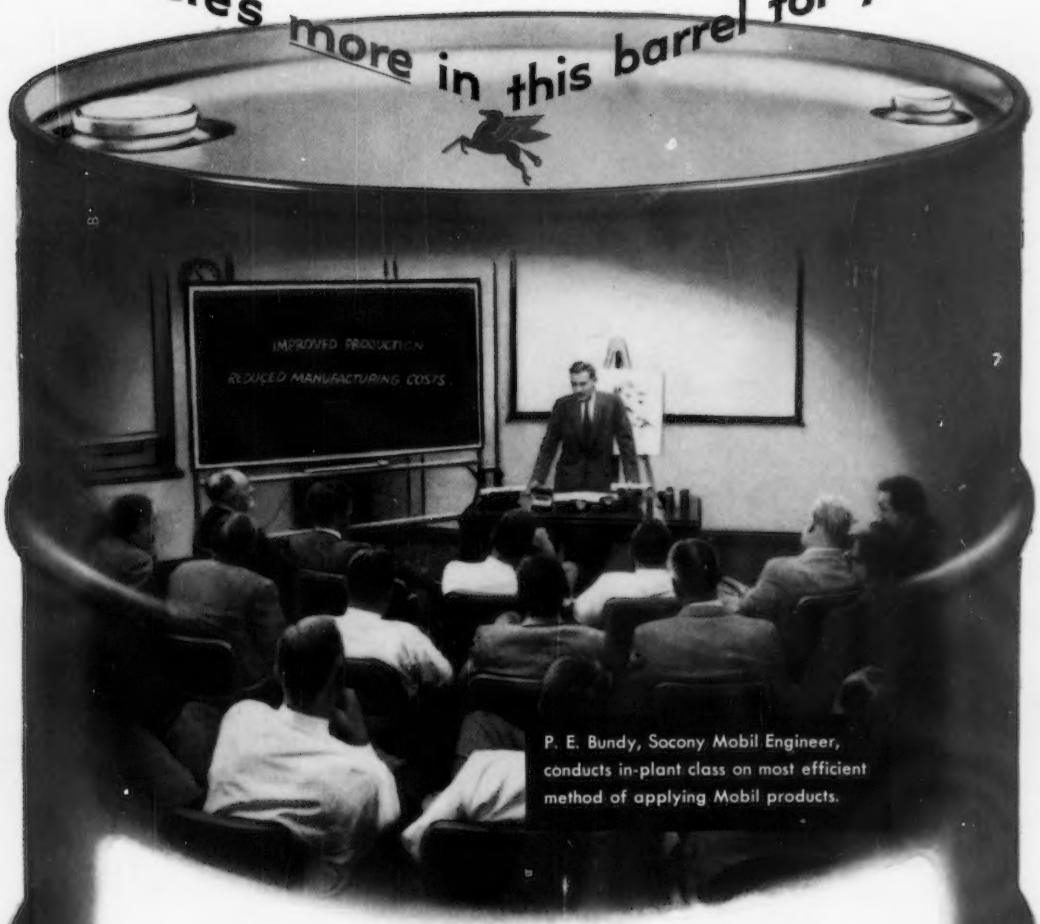

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